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A Farmstead in Northwestern Iowa Typical of Those Where Baby Beef is Produced. Records were Taken on this Farm in 1914 and 1915.

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[Contribution from the Office of Farm Management, W. J. Spillman, Chief, and the Bureau of Animal Industry, A. D. Melvin, Chief.]

MEAT SITUATION IN THE UNITED STATES.

PART III.

METHODS AND COST OF GROWING BEEF CATTLE IN THE CORN BELT STATES.

BY

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EXPLANATORY STATEMENT.

In the winter of 1913–14 a committee of well-known investigators, familiar with agricultural conditions, was appointed by the Secretary of Agriculture to consider the economics of the meat situation. This committee was composed of Dr. B. T. Galloway, Assistant Secretary of Agriculture, as chairman; Dr. H. J. Waters, president of the Kansas State Agricultural College; Prof. C. F. Curtiss, Dean of the Iowa State College of Agriculture and Mechanic Arts and director of the Iowa Agricultural Experiment Station; H. W. Mumford, Professor of Animal Husbandry, University of Illinois; Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture; and Dr. T. N. Carver, director of the Rural Organization Service, U. S. Department of Agriculture. Mr. Leon M. Estabrook, Chief of the Bureau of Crop Estimates, was made secretary of the committee.

No formal report was prepared by this committee, but, at the suggestion of the committee, independent inquiries dealing with several phases of the meat situation were undertaken by specialists of the U. S. Department of Agriculture. The results of these inquiries have been crystallized by the department in a series of five reports, under the general title of the "Meat Situation in the United States," each report complete within itself and bearing a separate number in the series of reports of the Office of the Secretary, as follows:

Part I. Statistics of Live Stock, Meat Production and Consumption, Prices, and International Trade for Many Countries. By George K. Holmes, Bureau of Crop Estimates. (Report No. 109.)

Part II. Live Stock Production in the Eleven Far Western Range States. By Will C. Barnes and James T. Jardine, Branch of Grazing, Forest Service. (Report No. 110.)

Part III. Methods and Cost of Growing Beef Cattle in the Corn Belt States. By J. S. Cotton and Morton O. Cooper, Office of Farm Management, and W. F. Ward and S. H. Ray, Animal Husbandry Division, Bureau of Animal Industry. (Report No. 111.)

Part IV. Utilization and Efficiency of Available American Feed Stuffs. By W. F. Ward and S. H. Ray, Animal Husbandry Division, Bureau of Animal Industry. (Report No. 112.)

Part V. Methods and Cost of Marketing Live Stock and Meats. By Louis D. Hall, F. M. Simpson, and S. W. Doty, Office of Markets and Rural Organization. (Report No. 113.)

CONTENTS.

	Page.
Object of investigation	5
Classification of records	6
Summary of results	6
Scope of investigation	9
Description of the districts visited	10
Climatic conditions	14
General information concerning the farms visited	15
The breeding herd	17
Value of the breeding herd	18
Value of cows	18
Value of bulls	20
Gross cost of maintaining the breeding herd	20
Cost of keeping a cow	20
Methods used in obtaining the various costs	27
Cost of keeping a bull	29
Net cost of maintaining the breeding herd	31
Net cost of maintaining a cow	32
Net cost of maintaining a bull	36
The calves	40
Average cost of raising a calf until weaning time	40
Cost of producing a yearling	51
A comparison of the cost of production and the value of calves and yearlings	59
Cost of producing baby beef	61

ILLUSTRATIONS.

PLATES.

Page.

PLATE I. A farmstead in northwestern Iowa typical of those where baby beef is produced. Records were taken on this farm in 1914 and 1915..... Frontispiece.

II. Topography in southwestern Iowa. Fig. 1.—The buildings shown are typical for beef-producing farms in this section. Fig. 2.—Characteristic rolling appearance of country with numerous farmsteads... 12

III. Topography in northeastern Kansas. Fig. 1.—A farm with bottom lands in corn, sloping hillsides in hay, and broken limestone hills utilized as pasture. Fig. 2.—A large pasture, characteristic of those found in the limestone section..... 12

IV. Farms which produce beef animals. Fig. 1.—A breeding herd typical of those used in the raising of baby-beef calves. Fig. 2.—A farm on which the equipment cost was $2.66 for each animal unit. The barns and lots are characteristic for farms raising beef animals in the corn belt..... 18

V. Baby-beef calves. Fig. 1.—A bunch of calves that will make excellent baby beef. Fig. 2.—Twenty-one baby beeves from southwestern Iowa that averaged 924 pounds when 16 months old. These are above the average of the baby beeves on which records were taken..... 60

TEXT FIGURES.

FIG. 1. Shaded areas show where data on cost of producing beef animals were obtained..... 5

2. The relative size of farms and the areas in pasture and in corn, in the six groups, by States..... 16

METHODS AND COST OF GROWING BEEF CATTLE IN THE CORN BELT STATES.

OBJECT OF INVESTIGATION.

The object of this investigation was to determine as accurately as possible the cost of producing beef animals on corn belt farms.[1] To this end information was gathered covering the following specific points:

(1) The cost of maintaining breeding animals.
(2) The cost of growing calves to weaning time.
(3) The cost of growing these calves to marketable age.
(4) The cost of producing baby beef.

In addition, effort was made to gather such other data as might throw light on the status of the present beef-cattle situation in the corn belt States.

In order to get significant figures, 596 records were obtained from farms in the States of Indiana, Illinois, Minnesota, Iowa, Missouri, South Dakota, Nebraska, and Kansas.[2] The general area covered by the survey is shown in figure 1.[3] An effort was made to get at least 20 records in a locality. The farms visited in the various States ranged in size from an average of 294 acres in Indiana and Illinois to 566 in Kansas. The value per acre was lowest in Indiana, being $59, and highest in Iowa, where the land was worth $175. Records were pro-

FIG. 1.—Shaded areas show where data on cost of producing beef animals were obtained.

[1] Acknowledgment is due Messrs. K. C. Ikeler, P. C. Tomlinson, and Clarence Cecil, who assisted in collecting the data presented in this report; and to Mr. H. R. Tolley, computer, Office of Farm Management, for valuable assistance in compiling the tabulations. The authors wish to acknowledge the courtesies extended by various members of the State experiment stations of the States in which the work was conducted. Thanks are also due to the many farmers who assisted in making this report possible.

[2] One of these records was from a farm in Missouri that did not maintain a breeding herd but purchased a bunch of calves and fattened them for baby beef. In dealing with the breeding herds 595 records are used.

[3] It will be noted that no investigations have as yet been made in a large area lying between the region where this survey was made and the region where costs were obtained on the production of beef animals under range conditions (see Report No. 110 of this series). In that area the costs are somewhat intermediate, but probably more nearly like those found under range conditions.

cured on 14,634 cows and 621 bulls, and on 12,591 calves produced from them, of which 2,023 were fattened for baby beef.

CLASSIFICATION OF RECORDS.

The records have been arranged in six groups, the classification being based on the six distinct practices followed, in general, by the farmers from whom records were obtained. As there were no existing terms that properly defined some of these groups they were, for convenience in discussion, arbitrarily classified as follows:

Beef.—Farms where all the cows are kept strictly for beef (not including farms producing baby beef). On a number of these farms enough milk was taken from two or three of the best milkers to supply the family with milk and butter. In such instances the milk and butter credits have been ignored, it being found that the value of the extra labor in milking and caring for the calf, and of the extra grain given, usually offsets the value of these milk products.

Baby beef.—Farms on which the breeding herds are maintained for the production of high-grade calves which are fattened on the same farm and sold at from 12 to 18 months of age as baby beef.

Dual purpose.—Farms on which all of the cows are milked, and either cream or butter sold, the calves being weaned at birth and raised on skim milk.

Mixed.—Farms on which the practice is to milk the best cows, their calves being weaned at birth and fed skim milk. The calves from the other cows are allowed to run with their dams as in the beef group. This is a combination of the beef and the dual-purpose business.

Partially milked.—Farms on which the calves are not weaned, but on which a part of the milk is drawn from the cow, the calf taking the remainder. There are a number of variations of this practice. One of these is to allow the calves to run with their dams during the day, but to keep them in a separate inclosure at night, the cows being milked in the morning. Another common practice is to keep the calves separate and allow them to take the bulk of the milk twice daily, the remainder being taken for household and market purposes.

Double nursing.—Farms where some of the cows are milked and their calves given to other cows, the latter raising two calves each.

SUMMARY OF RESULTS.

The gross cost of maintaining breeding cows (see Table 1) is lowest, $35.12, in the beef group, where roughage is the principal winter feed, and highest, $55.14, in the dual-purpose group, where the cows were fed grain throughout the winter. The cost for the other groups is intermediate.

The net cost of maintaining breeding cows is highest, $30.33, in the beef group and lowest, $6.07, in the dual-purpose group. The difference between the net cost and the gross cost for the different groups is largely due to milk products from cows that were milked.

The net maintenance cost for breeding bulls is highest, $53.26, in the baby-beef group and lowest, $34.14, in the partially-milked group. Where baby-beef calves are produced, breeding bulls of high quality are necessary and a high cost of maintenance results.

The percentage of cows raising calves to weaning time is greatest, 92.1, in the double-nursing group and smallest, 83.9, in the dual-purpose group. This percentage, which is largely dependent upon

TABLE 1.—*Summary table showing for the six groups the various factors that make up the cost of producing a yearling.*[1]

Item.	Beef.	Baby beef.[1]	Dual purpose.	Mixed.	Partially milked.	Double nursing.
Number of farms	230	66	110	102	65	22
Average number of cows per farm	31.50	34.56	12.75	23.47	14.29	17.32
Cost of maintaining the breeding herd:						
Gross cost of maintaining a cow	$35.12	$36.77	$55.14	$43.95	$42.75	$46.50
Credits other than calf	4.79	5.39	49.07	24.72	21.43	33.26
Net cost of maintaining a cow	30.33	31.38	6.07	19.23	21.32	13.24
Net cost of maintaining a bull	42.27	53.26	37.51	46.79	34.14	40.53
Calf crop:						
Percentage of cows raising calves to weaning time	84.9	90.7	83.9	87.5	90.1	92.1
Number of calves per bull	20.9	25.3	10.7	18.5	12.6	15.0
Cost of raising a calf to weaning time:						
Cow charge	35.47	34.50	7.34	22.29	23.71	14.53
Bull charge	2.26	2.29	4.02	2.91	3.35	3.02
Feed	.01	.00	9.35	4.48	.02	.26
Labor	.00	.00	2.56	1.11	.00	.01
Total cost at weaning time	37.74	36.79	23.27	30.79	27.08	17.82
Cost of raising a yearling:						
Number of farms	190	67	99	96	57	22
Average number of calves per farm	24.43	30.20	10.57	18.46	11.16	14.23
Cost at weaning time	[2] 38.20	[2] [3] *37.01*	[2] 23.64	[2] 30.61	[2] 26.39	17.82
Winter-feed cost	12.32	*35.02*	9.93	12.01	12.21	10.24
Other charges	4.62	*6.02*	4.92	4.72	4.66	3.86
Gross cost	55.14	*78.05*	38.49	47.34	43.26	31.92
Credits	1.60	*7.53*	1.89	1.48	1.54	1.67
Net cost	53.54	*70.52*	36.60	45.86	41.72	30.25

[1] The statement for the baby-beef group gives figures on the calves until they are marketed at approximately 15 months of age.

[2] The change in the number of farms on which the tabulation of cost of producing yearlings is based causes the figure on cost of calf at weaning time to change in this part of the table. See pages 51 and 52.

[3] Italic figures here call attention to the fact that the baby-beef animal is carried somewhat beyond the yearling stage.

the care and management of the herd, is an important factor affecting the cost of the calf.

The greatest item of expense in raising a calf to weaning time, except in the dual-purpose group, is the cow charge, or the part of the total cost of maintaining the breeding cows chargeable to each calf. This is greatest in the beef group and smallest in the dual-purpose group.

The bull charge, or the part of the cost of keeping a bull chargeable to the calf, is greatest, $4.02, in the dual-purpose group and smallest, $2.26, in the beef group. This charge is determined largely by the number of calves produced per bull.

The cost of raising a calf to weaning time is greatest, $37.74, in the beef group and lowest, $17.82, in the double-nursing group. While the cow charge was lowest in the dual-purpose group, the addition of the cost of feed and labor for the skim-milk calves makes the cost of the calf $23.27 at weaning time, which is somewhat greater than in the double-nursing group.

The cost of the calf at one year was highest, $53.54, in the beef group, with the cost of the calves in the mixed, partially-milked, dual-purpose, and double-nursing groups following in order. Winter-feeding costs indicate that there is comparatively little difference in the cost of keeping the calves of the five groups, other than baby beef, after weaning time.

Two items of expense in producing baby beef, the cost of the calf at weaning time, $37.01, and the cost of feeding the calf from weaning time until it is marketed, $35.02, constitute 90 per cent of the gross cost. The item of "credits" for the baby-beef calves, which amounts to $7.53, includes an allowance for manure and pork.

The beef calves, though the most valuable as yearlings, cost so much more than any of the others that they were the least profitable. Cost of production exceeded inventory value by $15.[1]

The calves in the dual-purpose group, although the poorest in quality, ranked second in point of profit. In this group, where all the cows were milked, credits for milk products are the dominant factor in reducing the cost of production.

In the mixed group, where the practice is a combination of that followed in the dual-purpose and that in the beef group, the cost and value of the calves are intermediate between those of these two groups. As two-thirds of the cows in this group were handled as were cows in the beef group, the figures more nearly approach those for the latter than for the dual-purpose group.

In the partially-milked group, where the breeding cows have nearly the same value as those in the dual-purpose group, the calves cost a little more to produce, but as the increased cost is reflected in the value of the calves, the profit or loss for the two groups is approximately the same.

The cost of production was least for the calves in the double-nursing group, and as these animals were relatively of good quality, they showed the greatest profit. Although there were but 22 farms in this group, the results seem very significant.

The baby-beef calves were produced at an average profit of $0.78 per head. These calves were marketed at an average age of 15 months, weighing 834 pounds at market and selling at $8.61 per hundredweight.

[1] All calves, except those in the baby-beef group, were inventoried just before being turned on pasture. Had they been carried on pasture until the following November they would have made a better financial showing, as gains are made very cheaply while on pasture.

Generally speaking, the calves were less profitable for 1914 than for 1915, because of the drought conditions prevalent in 1913 over the southern part of the area surveyed. The effect of the drought was most noticeable in those groups where the practice of milking some or all of the cows was followed.

The data obtained indicate that the keeping of cattle for beef purposes alone is adapted to the more extensive types of farming, while the keeping of cattle primarily for beef purposes, but where an income is also obtained from milk products, is better adapted to the more intensive types of farming.

The averages brought out in this investigation would seem to indicate that profits obtained from the raising of calves on corn belt farms are very small. However, these facts must be taken into consideration: (1) Good returns have been obtained for a large quantity of roughage which, had it not been utilized by live stock, would have been waste; (2) a home market has been provided for salable crops; (3) on many farms a large acreage suitable to pasture only has been utilized; (4) profitable employment is provided for a season of the year when labor otherwise might be idle; (5) a return is obtained for capital invested in equipment which, in many instances, were it not utilized by live stock, would return nothing; (6) when the farmer merely breaks even he has at least made 6 per cent interest on the money he has invested in the cattle business.

When all of these factors are taken into consideration, even though there appears to be little or no profit, it is believed that in most cases the farm income is greater because of cattle having been kept on the farm.

SCOPE OF INVESTIGATION.

During the summer of 1914 records were obtained in the States of Indiana, Illinois, Iowa, Missouri, southwestern Minnesota, southeastern South Dakota, and eastern Nebraska and Kansas, the greater part of the records being taken in the Missouri River region.

In 1915 records were taken in approximately the same territory, except that a larger area was covered than before in Minnesota, Iowa, and Kansas, while Indiana, Illinois, and South Dakota were not visited. Additional records were procured in 1915, in order that there might be a larger number of farms to study, and also that any variations due to abnormal climatic conditions might be overcome. This was especially necessary in some of the regions visited, which were affected by the severe drought of the summer of 1913. Sixty-eight of the farms from which records were taken in 1914 were again visited in 1915, that a two years' record might be available from a number of farms, to determine the possible fluctuations that may occur on the same farm in two consecutive years, and also to follow

up for another year, or until sold, some of the calves on which records were obtained in 1914.

The records were obtained by field men, who got the necessary information directly from the farmers. The data so obtained from each farm were assembled in such a manner that complete analyses could be made of all of the different transactions involved in handling the cattle. The data show, for the cattle business of each farm, all items of expense, all credits, and profit or loss.

While an effort was made to get 20 or more records in each locality, some of the classifications in individual States fall short of the number of records desirable for obtaining reliable averages. In order that variations caused by unusual conditions found on individual farms may be overcome, there should be at least 10, and better, 20 or more records in a group.

Lists of names were secured from persons well acquainted with the cattlemen of their sections. Farms where cows were kept for distinctly dairy purposes or where the herds were maintained only for the production and sale of pure-bred animals for breeding purposes were omitted. Herds having less than five cows and those where correct inventories of the breeding stock could not be obtained were also omitted. Otherwise no discriminations were made by the field men.

The results of this study represent the average of current practices on all the farms visited. It should be remembered in this connection that the farms in question were chosen at random, without reference to the efficiency or inefficiency of practices followed. This being true, it is believed that the records may be considered as representative of the present-day operations of the corn belt stock farm, and that it may reasonably be assumed that the tabulated results show approximately what it costs the average corn-belt stock farmer to maintain a breeding herd, or to produce a beef calf.

DESCRIPTION OF THE DISTRICTS VISITED.

INDIANA.

Twenty-three records (the classification of which is shown in Table 2) were obtained in Monroe and Greene Counties in 1914. The land is rough and broken in practically all of the region where the records were taken. The soil is mostly a silt loam, or clay loam, and is underlain by limestone in Monroe and sandstone in Greene County. The land is best adapted to grazing purposes, and at one time large numbers of beef cattle were raised in this region, but in recent years this number has been greatly reduced.

ILLINOIS.

Twenty-one records (see Table 2) were obtained in Pike, Adams, and Hancock Counties, in the west-central part of the State, in 1914. The land here is mostly level to slightly rolling, although on a number of farms where the records were taken it was considerably broken. The soil is principally a silt loam.

MINNESOTA.

Sixty records were obtained in six counties in southwestern Minnesota, nearly half of which (see Table 2) were in the dual-purpose group. Records were obtained two years in succession from eight of the farms visited. This region lies largely in the Wisconsin drift area, and the land is level to gently rolling. Much of it requires draining before the best results are obtained.

TABLE 2.—*The classification of the records obtained in the eight States in 1914 and 1915.*

State.	Beef.	Baby beef.	Dual purpose.	Mixed.	Partially milked.	Double nursing.	Total.
Indiana:							
1914	6	.....	1	.....	15	1	23
Illinois:							
1914	13	2	3	.....	1	2	21
Minnesota:							
1914	3	.....	6	8	.....	2	19
1915	9	.....	22	9	.....	1	41
Both years	12	.....	28	17	.....	3	60
Iowa:							
1914	23	15	24	16	3	1	82
1915	53	30	15	24	4	11	137
Both years	76	45	39	40	7	12	219
Missouri:							
1914	24	3	2	2	22	.....	53
1915	9	2	1	2	11	.....	25
Both years	33	5	3	4	33	.....	78
South Dakota:							
1914	6	.....	4	5	.....	.....	15
Nebraska:							
1914	24	6	3	8	1	.....	42
1915	14	3	2	3	1	1	24
Both years	38	9	5	11	2	1	66
Kansas:							
1914	21	.....	10	11	6	.....	48
1915	25	6	17	14	1	3	66
Both years	46	6	27	25	7	3	114
Grand total:							
1914	120	26	53	50	48	6	303
1915	110	41	57	52	17	16	293
Both years	230	67	110	102	65	22	596

IOWA.

Two hundred and nineteen records were obtained in Iowa, all but 20 of which were from the western half of the State. These 20 records were from Marshall, Tama, Benton, and Poweshiek Counties, in the east-central part of the State. Records were obtained two years in succession from 40 farms.

The southwestern quarter of the State is mostly rolling to broken. The soil, which belongs to the Missouri loess series, is very productive. Many of the farmers in this region maintain herds of pure-bred

or high-grade beef cattle for the production of baby-beef animals, or for the production of calves to be fattened as 2-year-olds. The beef-cattle business is more highly developed and is a more important farm enterprise in this section than in any other part of the State. The majority of the records obtained in this region belong either to the beef or to the baby-beef classification. Plate II shows the general rolling character of the country. The buildings in figure 1 are typical of those on farms producing beef cattle. The high development of the agriculture of this region is shown in figure 2.

In the northwestern quarter of the State the land varies from rolling to level. The soil belongs to the Missouri loess series and is very productive. In recent years the building of large drainage canals in some sections has greatly increased the crop-producing capacity of this region. The farms here are generally smaller than those in the southwestern part of the State, and the beef-cattle business is not nearly so highly developed. While a number of excellent beef and baby-beef records were obtained, the majority of the records belong either to the mixed or to the dual-purpose group, where the calves are largely raised on skim milk and kept until they are 2 years old before they are fed out. A typical farmstead of this region, from which baby-beef records were obtained two years in succession, is shown in Plate I.

In the east-central part of the State the land is mostly level to gently rolling. This is in the great corn-producing section of the State, and the farms are mostly of good size. Formerly a large number of steers were fattened annually in this region. In recent years this practice has been largely discontinued, although some of the leading farmers are now planning to maintain breeding herds and produce baby-beef animals.

MISSOURI.

Seventy-eight records were taken in Missouri, of which 53 were from Putnam and Sullivan Counties and 4 from Nodaway County, all on the northern border of the State. In Putnam and Sullivan Counties the land is of limestone formation and is very rolling. The soil, which is a loam or silt loam underlain with heavy clay, is best adapted to grazing purposes. The cattle are mostly grades, and most of the calves are usually kept until 2 years old and then fattened. The land in Nodaway County is rolling and the type of farming, generally speaking, is similar to that just across the line in southwestern Iowa.

Sixteen of the records were obtained in central Missouri (Boone and Howard Counties), where the land is of a limestone formation and slightly rolling. Bluegrass grows luxuriantly and the region is ideal for the growing of a high grade of stock. A number of farmers

FIG. 1.—THE BUILDINGS SHOWN ARE TYPICAL FOR BEEF-PRODUCING FARMS IN THIS SECTION.

FIG. 2.—CHARACTERISTIC ROLLING APPEARANCE OF COUNTRY, WITH NUMEROUS FARMSTEADS.

TOPOGRAPHY IN SOUTHWESTERN IOWA.

FIG. 1.—A FARM WITH BOTTOM LANDS IN CORN, SLOPING HILLSIDES IN HAY, AND BROKEN LIMESTONE HILLS UTILIZED AS PASTURE.

FIG. 2.—A LARGE PASTURE, CHARACTERISTIC OF THOSE FOUND IN THE LIMESTONE SECTION.

TOPOGRAPHY IN NORTHEASTERN KANSAS.

in this district are producing calves which are in great demand for finishing as baby beef. These are usually sold in the fall and only the breeding herd retained on the farm during the winter months.

Five records were taken in Oregon County, in the south-central portion of the State, where the land is rough and broken and is best adapted to live-stock farming.

SOUTH DAKOTA.

Fifteen records were taken in six counties in southeastern South Dakota in 1914. The farms from which these records were obtained are scattered over a considerable territory, where the farming conditions are very diverse. The most of them are similar to those described in Iowa, while three or four, in addition to having the usual amount of tillable land, also have a large acreage of cheap, sandy pasture land.

NEBRASKA.

Sixty-six records were taken in the eastern quarter of Nebraska, about an equal number being obtained on each side of the Platte River. To the north of the Platte River, average corn belt methods of farming prevail, except on a few farms which possessed large areas of cheap, sandy pasture lands in addition to the regular tilled area. Some of the cattle are owned by farmers of limited means, who are producing animals of average quality. Others are handled by men with large farms and with plenty of working capital, who produce only high-grade animals which are usually finished as 2-year-olds or 3-year-olds, although a few baby beeves are fattened.

To the south of the Platte River, especially in Cass County, where most of the records were obtained, the land is quite rolling and the soil, in general, is a silt loam.

KANSAS.

One hundred and fourteen records were obtained in the eastern third of Kansas. About one-fourth of these came from the northeastern corner of the State, where the land is more or less rolling and the soil is for the most part a silt loam. The farms are mostly small and the majority of the farmers sell some milk products. The remainder of the records are mostly from large farms situated in the so-called limestone section of Kansas, where there is much rough land which is underlain with limestone and is best kept in pastures. In this area the soil in the valleys is very productive and excellent crops are grown, there being large areas in alfalfa. The characteristic topography of the limestone region is shown in Plate III; figure 1 shows a farm where the bottom lands are utilized for the growing of crops, while the broken limestone hills are used for pasture, and figure 2 shows one of the pastures common in this region.

CLIMATIC CONDITIONS.

In 1913 a severe drought prevailed over a considerable part of the region covered by the survey. The farms in Minnesota, South Dakota, and that portion of northern Nebraska and Iowa that was visited did not suffer to any appreciable extent because of this drought. Its influence was felt in Illinois, but it was not severe enough to affect the feed costs materially. In Indiana, southwestern Iowa, southeastern Nebraska, Missouri, and Kansas practically all the farms visited were affected by this drought. The hay crop was considerably damaged, being almost a failure in Indiana. Corn was also seriously damaged, and in Indiana, but for the fact that much of it was utilized as silage, the crop would have been nearly a failure. The corn crop was very poor in Missouri and a complete failure in northeastern Kansas. On the Kansas farms visited the average yield was only about three-fourths of a ton of fodder, practically without grain. Because of the scarcity of feed, this sold in many instances at the rate of $5 an acre.

Pastures also suffered severely, the most of them being burned up by midsummer, so that it was necessary to supplement pasture with other feeds such as hay and cut fodder. While feed prices were much higher than usual in those sections where the drought prevailed, they did not affect the feed costs as much as might be expected. This is partly because the farmers most affected disposed of their calves and other superfluous stock early in the fall, and maintained only their breeding herds, even these being sometimes cut down. Also, a number of the farmers carried their stock over on rather low maintenance rations.

Fortunately, there were ample fall rains in all of this region, so that the pastures, except in Kansas, revived quickly and furnished much late fall and early winter grazing, which greatly relieved the situation. In Kansas, as a result of these rains, the winter wheat made an unusually luxuriant growth and furnished much pasturage. A number of the Kansas farmers took advantage of these rains and sowed wheat and rye pastures which were grazed practically throughout the entire winter. Thus they were enabled to carry their breeding herds through in fairly good shape without being compelled to buy any large amount of extra feed.

Conditions were much more favorable in 1914. Although the summer was very hot and the precipitation was still less than normal in some sections, this did not seriously affect the crops, except that in parts of southwestern Iowa and southeastern Nebraska corn was somewhat damaged. There was, however, an ample hay crop, and the feed prices were generally normal. In Kansas many of the pastures still showed the effects of the drought and did not carry as much stock as in former years.

GENERAL INFORMATION CONCERNING THE FARMS VISITED.

The average size and value of the farms visited, together with acreages in pasture, corn, small grain, and hay, is shown in Table 3. The farms in Indiana and Illinois were the smallest, averaging 294 acres, while those in Iowa were slightly larger, averaging a little over 300 acres in size. The next largest farms were found in Minnesota and Missouri, with a little over 355 acres each, and in Nebraska with 380 acres. The largest farms were found in South Dakota and Kansas, where a few ranches increased the average size to 511 and 566 acres, respectively. In Kansas the entire acreage is not shown, as a number of the farmers rented additional pasturage, the rental being at a stipulated sum per head.

TABLE 3.—*The average size and value of farms visited and the percentage of each in pasture, corn, small grain, and hay, by States.*

State.	Number of farms.	Average size of farms.	Area in pasture.		Area in corn.		Area in small grain.		Area in hay.		Value of land.
		Acres.	*Acres.*	*Per cent.*	*Acres.*	*Per cent.*	*Acres.*	*Per cent.*	*Acres.*	*Per cent.*	*Per acre.*
Indiana:											
1914	23	294	191	65	43	15	16	5	25	9	$59
Illinois:											
1914	21	294	158	54	60	20	32	11	38	13	129
Minnesota:											
1914	19	363	121	33	90	25	61	17	45	12	124
1915	41	354	95	27	82	23	68	19	54	15	125
Both years	60	357	104	29	85	24	66	18	51	14	125
Iowa:											
1914	82	296	83	28	90	30	56	19	42	14	175
1915	137	305	98	32	83	27	53	17	36	12	175
Both years	219	301	93	31	85	29	54	18	38	13	175
Missouri:											
1914	53	356	184	52	53	15	39	11	64	18	77
1915	25	357	169	47	54	15	32	9	84	24	92
Both years	78	356	179	50	53	15	36	10	71	20	82
South Dakota:											
1914	14	511	180	35	146	29	90	18	75	15	97
Nebraska:											
1914	42	362	96	27	106	29	74	20	53	15	139
1915	24	410	149	37	103	25	75	18	54	13	122
Both years	66	380	116	31	105	28	74	19	53	14	132
Kansas:											
1914	48	514	294	57	82	16	63	12	60	12	74
1915	66	604	349	57	77	13	62	10	75	12	85
Both years	114	566	326	57	79	15	62	11	69	12	80

The average area devoted to pasture varies from 104 acres, or 29 per cent of the total farm area, in Minnesota to 191 acres, or 65 per cent, in Indiana, where the land is generally rough and broken. The area in corn varies from 43 acres, or 15 per cent of the total farm area, in Indiana to 146 acres, or 29 per cent, in South Dakota and 105 acres, or 28 per cent, in Nebraska. An average of 85 acres, or 29 per cent of the area of the farms visited in Iowa, was planted to corn. The amount of small grain, including oats, wheat, and barley, varied from 5 per cent of the total area in Indiana to 18 per cent in Iowa and South Dakota and 19 per cent in Nebraska. The area of hay on these farms ranged from 9 per cent in Indiana to 20 per cent in Missouri.

The average value of the land on the Indiana farms, where 65 per cent of the land is in pasture and only 15 per cent in corn, is $59 per acre. In Iowa, where 31 per cent of the farm is in pasture and 29

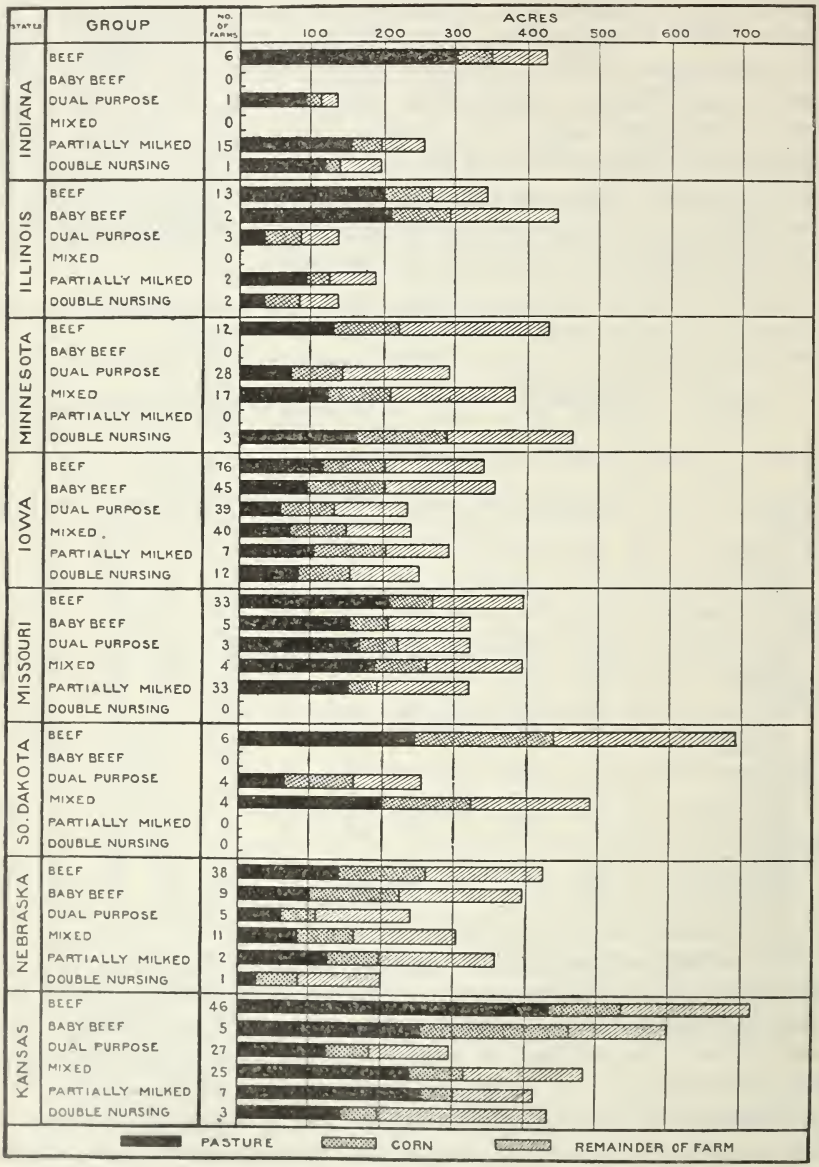

FIG. 2.—The relative size of farms and the areas in pasture and in corn, in the six groups, by States.

per cent in corn, the average value is $175 per acre (see Pl. II). The Nebraska farms, 31 per cent of which were devoted to pasture and 28 per cent to corn, are valued at $132 per acre.

Generally speaking, on the farms that were visited, the larger the area in corn and the smaller the area in pasture the more valuable the land. The Indiana farmers had an average investment in real estate of less than $20,000, while for the Iowa farmers the same investment was from $50,000 to $55,000.

The farms (see fig. 2) in the beef and baby-beef groups invariably average larger than those in any of the other groups in all States. The dual-purpose group, ignoring cases where there were only one or two records, average the smallest, although in Iowa they were very nearly as large as those in the mixed and double-nursing groups. The farms in the mixed, partially-milked, and double-nursing groups were all intermediate in size between those of the beef and the dual-purpose groups, varying in size more or less according to the State.

The diagram (fig. 2) also shows the comparative area of land in pasture and in corn. In Kansas much additional pasture which is not shown was rented. One 4,500-acre ranch in the baby-beef group, of which 4,200 acres were in pasture, was omitted. One 5,000-acre farm in the mixed group in South Dakota was also omitted, this farm being operated as a unit by a Mennonite colony.

THE BREEDING HERD.

Out of the 595 records obtained, 296 (see Table 4), or nearly one-half, are from the beef and baby-beef groups; 110 belong to the dual-purpose group; 102 to the mixed classification, where some of the best cows are milked; 65 to the partially-milked group, where all of the calves run with the cows, but a part of the milk is taken; and 22 to the double-nursing group, where some of the cows were made to support two calves, the remaining cows being milked. Records were obtained on 14,634 cows and 621 bulls. The average size of the breeding herds was 34.6 cows in the baby-beef, 31.5 in the beef, 23.5 in the mixed, 17.3 in the double-nursing, 14.3 in the partially-milked, and 12.8 in the dual-purpose group.

The average farmer visited keeps one bull, the precise average of bulls per farm being 1.04. Practically all of the farmers in the beef and baby-beef groups keep one or more, the average being 1.23 per farm in the baby-beef and 1.11 in the beef group. In the mixed group nearly every farmer keeps a bull, while a few of them have more than one, the average number per farm being 0.99. In the remaining three groups a number of the farmers do not keep bulls, but depend for service upon the bulls of their neighbors. In a number of instances two farmers would combine in the buying and maintaining of a bull, sharing the cost price and each keeping the bull for a certain part of the year. The average number of bulls in the dual-purpose group is 0.94, while the averages found in the double-nursing and partially-milked groups are 0.91 and 0.92, respectively.

45722—16——3

TABLE 4.—*The size of the herds in each of the different groups.*

Group.	Number of farms.	Cows.		Bulls.	
		Total number.	Average number.	Total number.	Average number.
Beef:					
1914	120	3,543	29.52	129	1.07
1915	110	3,703	33.66	126.5	1.15
Both years	230	7,246	31.50	255.5	1.11
Baby beef:					
1914	25	854	34.22	29	1.16
1915	41	1,427	34.80	52	1.27
Both years	66	2,281	34.56	81	1.23
Dual purpose:					
1914	53	653	12.32	49.25	.93
1915	57	750	13.16	54	.95
Both years	110	1,403	12.75	103.25	.94
Mixed:					
1914	50	1,274	25.48	50.5	1.01
1915	52	1,120	21.54	50.5	.97
Both years	102	2,394	23.47	101	.99
Partially milked:					
1914	48	638	13.30	44.5	.92
1915	17	291	17.12	16	.94
Both years	65	929	14.29	60.5	.92
Double nursing:					
1914	6	99	16.50	5	.83
1915	16	282	17.62	15	.94
Both years	22	381	17.32	20	.91
Grand total or general average:					
1914	302	7,061	23.30	307.25	1.02
1915	293	7,573	25.85	314	1.07
Both years	595	14,634	24.55	621.25	1.04

VALUE OF THE BREEDING HERD.

VALUE OF COWS.

The average inventory value of the cows in the six groups, as shown in Table 5, is $63.[1] The cows in both Iowa and Illinois are inventoried at approximately $66, this being the highest figure for any of the States. In Kansas, Nebraska, South Dakota, and Missouri, the averages range from $61 to $64 per head, while in Minnesota and Indiana, respectively, the average value falls to $57 and $55. The cows in the baby-beef group, being the best bred animals, are worth $70 per head, varying in value from $66 in Missouri to $74 in Kansas. A herd of breeding cows, such as are used for the production of baby-beef calves, is shown in Plate IV, figure 1. The cows in the mixed group are valued at $65, those in the beef and double-nursing groups at $64, and those in the dual-purpose and partially-milked groups at $60.

[1] Before taking up the discussion of the data presented in the following tables, it is desirable that the method used in computing averages in this study be explained, so that there may be no misunderstanding as to how the figures were obtained. The farm is taken as the unit and the averages are based on the number of farms, and not on the total number of animals. For example, in Table 5, the average value of cows in the beef group in Indiana is $59.58. This figure was obtained as follows: The average value per head of the cows on farm No. 1 was $60; on farm No. 2, $50; on farm No. 3, $80, etc. This value for each of the six farms was added and divided by 6, the quotient resulting being $59.58, and this was used as the average value of the cows in this group. This method of computing has been used in obtaining all averages in the data presented, and accounts for the fact that in some instances it is not possible to check figures which, apparently, should check out.

FIG. 1.—A BREEDING HERD TYPICAL OF THOSE USED IN THE RAISING OF BABY-BEEF CALVES.

FIG. 2.—A FARM ON WHICH THE EQUIPMENT COST WAS $2.66 FOR EACH ANIMAL UNIT. THE BARNS AND LOTS ARE CHARACTERISTIC FOR FARMS RAISING BEEF ANIMALS IN THE CORN BELT.

FARMS WHICH PRODUCE BEEF ANIMALS.

TABLE 5.—*A comparison of the values of the cows in the six groups, by States.*

State.	Beef.		Baby beef.		Dual purpose.		Mixed.		Partially milked.		Double nursing.		Total.	
	Number of cows.	Average value.	Number of cows.	Average value.	Number of cows.	Average value.	Number of cows.	Average value.	Number of cows.	Average value.	Number of cows.	Average value.	Number of cows.	Average value.
Indiana:														
1914	99	$59.58	.....	.....	8	$50.00	.....	.....	143	$54.33	12	$50.00	262	$55.33
Illinois:														
1914	273	66.15	105	$68.75	25	60.00	.....	.....	12	75.00	15	63.75	430	65.71
Minnesota:														
1914	67	55.83	.....	.....	73	55.00	246	$73.12	.....	.....	55	62.50	441	63.55
1915	193	54.72	.....	.....	352	54.09	181	55.00	.....	.....	25	55.00	751	54.55
Both years	260	55.00	.....	.....	425	54.29	427	63.53	.....	.....	80	60.00	1,192	57.33
Iowa:														
1914	674	70.22	492	69.82	279	64.08	275	66.72	75	65.83	17	62.50	1,812	67.41
1915	1,686	66.08	931	69.65	182	61.50	382	63.96	76	61.25	183	63.86	3,440	65.67
Both years	2,360	67.33	1,423	69.71	461	63.08	657	65.06	151	63.21	200	63.75	5,252	66.32
Missouri:														
1914	447	65.77	37	67.50	40	63.75	27	57.50	300	62.27	.....	.....	851	62.75
1915	282	63.89	46	65.00	10	75.00	50	82.50	176	62.27	.....	.....	564	65.20
Both years	729	65.26	83	66.25	50	67.50	77	70.00	476	62.27	.....	.....	1,415	63.54
South Dakota:														
1914	181	58.33	.....	.....	44	55.00	244	68.50	.....	.....	.....	.....	469	60.83
Nebraska:														
1914	679	62.50	220	67.08	32	70.83	152	63.75	25	70.00	.....	.....	1,108	64.17
1915	346	62.39	114	66.67	13	72.50	69	65.83	7	65.00	9	55.00	558	64.00
Both years	1,025	62.46	334	66.94	45	71.50	221	64.32	32	67.50	.....	.....	1,666	64.11
Kansas:														
1914	1,123	62.05	.....	.....	152	60.05	330	61.82	83	55.00	.....	.....	1,688	60.70
1915	1,196	60.30	336	74.17	193	59.41	438	67.14	32	50.00	65	75.00	2,260	63.30
Both years	2,319	61.10	.....	.....	345	59.65	768	64.80	115	54.29	.....	.....	3,948	62.20
Grand total or general average:														
1914	3,543	64.43	854	68.90	653	61.48	1,274	66.00	638	59.53	99	60.83	7,061	63.48
1915	3,703	63.19	1,427	69.87	750	58.64	1,120	64.09	291	61.47	282	64.84	7,573	63.39
Both years	7,246	63.83	2,281	69.50	1,403	60.01	2,394	65.02	929	60.04	381	63.75	14,634	63.44

TABLE 6.—*A comparison of the value of the bulls in the six groups, by States.*

State.	Beef.		Baby beef.		Dual purpose.		Mixed.		Partially milked.		Double nursing.		Total.	
	Number of bulls.	Average value.	Number of bulls.	Average value.	Number of bulls.	Average value.	Number of bulls.	Average value.	Number of bulls.	Average value.	Number of bulls.	Average value.	Number of bulls.	Average value.
Indiana:														
1914	6	$102.08	.....	.....	1	$50.00	.....	.....	12.5	$81.96	1	$50.00	20.5	$84.73
Illinois:														
1914	12	90.75	3	$200.00	2	80.00	.....	.....	1	60.00	1	60.00	19	103.63
Minnesota:														
1914	2	100.00	.....	.....	5	75.50	7	$142.14	.....	.....	2	104.00	16	111.28
1915	9	113.89	.....	.....	22	71.68	8	114.68	.....	.....	1	100.00	40	90.43
Both years	11	111.36	.....	.....	27	72.02	15	127.33	.....	.....	3	102.67	56	96.38
Iowa:														
1914	24	156.12	16	137.63	22.75	93.80	16	150.00	3	80.00	1	75.00	82.75	103.49
1915	62.5	125.42	32	155.47	14	91.79	21.5	97.67	4	90.00	11	104.77	145	122.14
Both years	86.5	133.93	48	149.52	36.75	93.03	37.5	120.00	7	85.77	12	102.28	227.75	125.17
Missouri:														
1914	23.5	108.53	2	125.00	3	123.33	2	60.00	21	70.45	.....	.....	51.5	92.62
1915	11	109.09	2	160.00	1	50.00	3	158.33	11	88.64	.....	.....	28	107.86
Both years	34.5	108.70	4	142.50	4	105.00	5	119.00	32	76.70	.....	.....	79.5	97.98
South Dakota:														
1914	6	120.00	.....	.....	4	91.25	7	183.93	1	112.50	.....	.....	17	139.56
Nebraska:														
1914	28	122.16	8	145.63	3	132.50	7	102.14	.....	.....	.....	.....	47	123.62
1915	16	99.22	4	184.37	2	100.00	3	101.57	.....	.....	1	100.00	26	112.68
Both years	44	113.82	12	158.54	5	119.50	10	102.00	.....	.....	.....	.....	73	119.73
Kansas:														
1914	27.5	118.05	.....	.....	8.5	68.38	11.5	108.70	6	67.50	.....	.....	53.5	102.47
1915	28	129.64	14	187.14	15	75.17	15	135.29	1	150.00	2	87.50	75	127.29
Both years	55.5	123.90	.....	.....	23.5	72.71	26.5	118.64	7	79.29	.....	.....	128.5	117.35
Grand total or general average:														
1914	129	120.82	29	145.41	49.25	90.06	50.5	134.01	44.5	74.64	5	113.60	307.25	113.57
1915	126.5	120.80	52	166.39	54	78.51	50.5	112.65	16	92.81	15	90.17	314	116.88
Both years	255.5	120.81	81	158.80	103.25	84.02	101	123.33	60.5	79.45	20	96.03	621.25	115.24

VALUE OF BULLS.

The comparative value of bulls in the six groups for the eight States is shown in Table 6. The average value for all bulls is $115. As many of these bulls were yearlings and had not yet attained their full value, the quality of the animals is somewhat higher than is indicated by the figures given. As in the case of the cows, the bulls in the baby-beef group are the best animals, having an average value of $159. The value of bulls in the mixed group averages $123; in the beef group, $121; in the double-nursing group, $96.03; in the partially-milked group, $80; and in the dual-purpose group, $84. The average value of bulls in each of the States is generally in keeping with that of cows. Practically all of the bulls used in the beef, baby-beef, and mixed groups are pure bred.

GROSS COST OF MAINTAINING THE BREEDING HERD.

In ascertaining the cost of maintaining the breeding herd, the charges for cows and bulls have been worked up separately. This was done because the charges for bulls vary somewhat from those for cows, as bulls frequently receive extra feed and better care than do cows, and also because some of the other charges for these animals must naturally be apportioned differently.

COST OF KEEPING A COW.

Tables 7 to 12, inclusive, show the annual farm cost of keeping a cow in each of the six groups for the year beginning May 1, 1913, and ending April 30, 1914, which in this report is designated as "1914"; and for the year beginning May 1, 1914, and ending April 30, 1915, designated as "1915." In these tables practically all of the items of expense, except for salt and for depreciation in value, have been included. No depreciation was figured, as it was found that the cows were generally sold for beef when 7 or 8 years old, usually bringing enough more than their value upon entering the herd to cover the cost of the extra feed used in fitting them for market.

The following items of expense have been included in the tabulations: Feed, labor, equipment, interest, taxes, insurance (against fire, lightning, and tornado), risk (or loss by death), and veterinary expenses.

Cost of keeping a cow in the beef group.—The average farm cost of keeping a beef cow a year for 230 farms, having a total of 7,246 breeding cows, as shown in Table 7, is $35.12. The greatest item of expense is feed, which amounts to $24.69, making 70.3 per cent of the total. This feed cost is divided into summer feed, which amounts to $8.20, and winter feed, which averages $16.49. The winter-feed bill, which is double that for the summer months, is mostly for roughage, only 10 per cent of the charge being for grain. The next heaviest charge

TABLE 7.—*The various items of expense of keeping a cow 1 year, based on averages for 230 farms in the beef group.*

State.	Number of farms.	Number of cows.	Average cost per cow.										
			Feed charges.			Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
			Summer.	Winter.	Entire year.								
Indiana:													
1914	6	99	$8.21	$16.49	$24.70	$5.14	$3.16	$3.57	$0.43	$0.78	$0.06	$0.65	$38.49
Illinois:													
1914	13	273	8.95	18.71	27.66	4.69	2.52	3.97	.43	.37	.02	.22	39.88
Minnesota:													
1914	3	67	4.67	16.81	21.48	6.10	1.07	3.35	.43	.26	.02	.00	32.71
1915	9	193	4.93	18.72	23.65	4.45	2.10	3.25	.43	.31	.04	.09	34.32
Both years	12	260	4.87	18.24	23.11	4.86	1.84	3.28	.43	.30	.03	.07	33.92
Iowa:													
1914	23	674	10.65	15.15	25.80	3.64	2.52	4.21	.43	.27	.09	.13	37.09
1915	53	1,686	8.36	18.74	27.10	3.19	2.38	3.98	.43	.28	.07	.08	37.51
Both years	76	2,360	9.06	17.65	26.71	3.33	2.42	4.05	.43	.28	.08	.09	37.39
Missouri:													
1914	24	447	7.86	14.53	22.39	5.35	1.64	3.97	.43	.26	.02	.26	34.32
1915	9	282	9.88	10.97	20.85	3.61	1.28	3.83	.43	.28	.09	.07	30.44
Both years	33	729	8.41	13.56	21.97	4.87	1.54	3.93	.43	.27	.04	.21	33.26
South Dakota:													
1914	6	181	6.98	11.83	18.81	2.89	.68	3.50	.43	.25	.00	.16	26.72
Nebraska:													
1914	24	679	8.92	14.25	23.17	3.38	1.22	3.75	.43	.45	.07	.18	32.65
1915	14	346	7.81	13.32	21.13	2.94	1.53	3.74	.43	.32	.05	.20	30.34
Both years	38	1,025	8.51	13.91	22.42	3.22	1.33	3.75	.43	.40	.06	.19	31.80
Kansas:													
1914	21	1,123	6.01	21.58	27.59	4.02	.72	3.72	.43	.36	.09	.02	36.95
1915	25	1,196	8.20	15.61	23.81	4.23	.96	3.55	.43	.42	.02	.07	33.49
Both years	46	2,319	7.20	18.33	25.53	4.13	.85	3.63	.43	.39	.06	.05	35.07
Grand total or general average:													
1914	120	3,543	8.30	16.30	24.60	4.21	1.67	3.87	.43	.35	.06	.18	35.37
1915	110	3,703	8.10	16.70	24.80	3.53	1.83	3.78	.43	.32	.06	.10	34.85
Both years	230	7,246	8.20	16.49	24.69	3.88	1.75	3.83	.43	.34	.06	.14	35.12

TABLE 8.—*The various items of expense of keeping a cow 1 year, based on averages for 66 farms in the baby-beef group.*

State.	Number of farms.	Number of cows.	Average cost per cow.										
			Feed charges.			Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
			Summer.	Winter.	Entire year.								
Illinois:													
1914	2	105	$8.21	$12.34	$20.55	$3.31	$1.95	$4.13	$0.43	$0.35	$0.05	$0.14	$30.91
Iowa:													
1914	15	492	10.23	17.28	27.51	2.57	3.41	4.19	.43	.26	.17	.06	38.60
1915	30	931	8.45	18.01	26.46	3.12	2.14	4.18	.43	.28	.11	.11	36.83
Both years	45	1,423	9.05	17.76	26.81	2.94	2.56	4.18	.43	.28	.13	.09	37.42
Missouri:													
1914	2	37	12.00	16.48	28.48	4.28	1.52	4.05	.43	.26	.09	.38	39.49
1915	2	46	8.75	18.54	27.29	2.94	.28	3.90	.43	.29	.06	.00	35.19
Both years	4	83	10.37	17.51	27.88	3.61	.90	3.97	.43	.28	.08	.19	37.34
Nebraska:													
1914	6	220	9.55	17.59	27.14	3.90	2.10	4.02	.43	.44	.08	.15	38.26
1915	3	114	8.75	8.41	17.16	3.92	1.56	4.00	.43	.41	.11	.23	27.82
Both years	9	334	9.28	14.53	23.81	3.91	1.92	4.02	.43	.43	.09	.18	34.79
Kansas:													
1915	6	336	8.75	18.27	27.02	2.78	1.36	4.45	.43	.39	.00	.06	36.49
Grand total or general average:													
1914	25	854	10.04	16.90	26.94	3.09	2.83	4.13	.43	.31	.13	.11	37.97
1915	41	1,427	8.53	17.37	25.90	3.12	1.89	4.19	.43	.31	.09	.11	36.04
Both years	66	2,281	9.11	17.19	26.30	3.11	2.25	4.16	.43	.31	.10	.11	36.77

is for labor, which is $3.88 per year, followed by interest ($3.83) and equipment ($1.75). The items of taxes, insurance, and veterinary services are very small, totaling about 1½ per cent of the entire cost. The heaviest total cost, $39.88, is found in Illinois; the lowest, $26.72, in South Dakota. In the remaining States costs range from $31.80 in Nebraska to $38.49 in Indiana. It is significant that in Iowa the costs were practically the same for both years. It will be noted that with the exception of Minnesota the costs were generally greater in 1914 than in 1915. This difference is due to the drought of 1913, which was especially severe in Kansas and Missouri. This is shown by the fact that the winter-feed cost in Kansas was $21.58 in 1914 as against $15.61 in 1915.

Cost of keeping a cow in the baby-beef group.—The average cost of keeping a cow in the baby-beef group (as shown in Table 8) is $37.97 for 1914 and $36.04 for 1915, with an average of $36.77 for the two years. This is $1.65 greater than the average cost of keeping a cow in the beef group. (The cow in the baby-beef group gets somewhat better care than the beef cow.) This cost varies from $27.82 for three farms in Nebraska in 1915 to $39.49 for two farms in Missouri in 1914. Most of the records were obtained in Iowa, where the average cost was $37.42. Because of the drought of 1913, the maintenance cost of these cows was a little greater in 1914 than in 1915. Of the total cost, 71.5 per cent was for feed, which amounted to $26.30. The interest charge averaged $4.16, while the labor amounted to $3.11. The minor items of expense were practically the same as for the beef group.

Cost of keeping a cow in the dual-purpose group.—The average cost of keeping a cow for the 110 farms in the dual-purpose group (see Table 9) is $55.14, or practically $20 greater than for the beef and baby-beef groups. This difference is due to the extra feed and labor necessary in the production of milk. The average cost of feed is $32.05, or a little over 58 per cent of the total charge. While the summer-feed costs in this group are slightly less than in the two preceding groups, the winter-feed costs are a third greater, because of the additional grain required in milk production. In this group the grain bill makes approximately one-fourth of the total expense of winter feed. The labor charge, which is $15.23, makes a little over one-fourth of the entire cost. The charge for equipment, $3.32, is also higher than in the preceding groups, the dual-purpose animals being, of necessity, better stabled. The total cost per head, omitting one farm in Indiana, varies from $44.57 in Nebraska to $62.07 for three farms in Illinois.

Cost of keeping a cow in the mixed group.—The average cost of keeping a cow for 102 farms in the mixed group, as shown in Table 10, is $43.95. This cost is intermediate between those of the dual-

TABLE 9.—*The various items of expense of keeping a cow 1 year, based on averages for 110 farms in the dual-purpose group.*

State.	Number of farms.	Number of cows.	Average cost per cow.										
			Feed charges.			Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
			Summer.	Winter.	Entire year.								
Indiana:													
1914	1	8	$9.00	$10.44	$19.44	$12.96	$2.84	$3.00	$0.43	$0.78	$0.00	$0.00	$39.45
Illinois:													
1914	3	25	9.89	26.09	35.98	18.81	2.80	3.60	.43	.35	.00	.10	62.07
Minnesota:													
1914	6	73	7.42	31.30	38.72	14.15	5.63	3.33	.43	.26	.09	.00	62.61
1915	22	352	5.10	25.42	30.52	16.59	2.90	3.25	.43	.31	.05	.02	54.07
Both years	28	425	5.60	26.68	32.28	16.06	3.49	3.26	.43	.30	.06	.02	55.90
Iowa:													
1914	24	279	10.05	25.26	35.31	13.90	3.79	3.84	.43	.25	.11	.10	57.73
1915	15	182	8.50	26.77	35.27	14.54	3.47	3.69	.43	.27	.07	.09	57.83
Both years	39	461	9.46	25.84	35.30	14.14	3.67	3.78	.43	.26	.09	.10	57.77
Missouri:													
1914	2	40	9.00	16.83	25.83	14.24	3.60	3.82	.43	.26	.00	.20	48.38
1915	1	10	8.75	15.89	24.64	11.57	4.77	4.50	.43	.28	.04	.00	46.23
Both years	3	50	8.92	16.52	25.44	13.34	3.99	4.05	.43	.27	.01	.13	47.66
South Dakota:													
1914	4	44	5.04	22.32	27.36	14.08	1.88	3.23	.43	.44	.00	.08	47.50
Nebraska:													
1914	3	32	8.33	12.48	20.81	10.03	4.02	4.25	.43	.37	.06	.00	39.97
1915	2	13	5.75	22.72	28.47	15.72	2.05	4.35	.43	.30	.13	.00	51.45
Both years	5	45	7.30	16.58	23.88	12.31	3.23	4.29	.43	.34	.09	.00	44.57
Kansas:													
1914	10	152	7.11	21.95	29.06	13.12	3.12	3.60	.43	.32	.07	.21	49.93
1915	17	193	8.86	21.84	30.70	18.54	2.75	3.56	.43	.40	.08	.41	56.87
Both years	27	345	8.21	21.89	30.10	16.53	2.89	3.58	.43	.37	.07	.33	54.30
Grand total or general average:													
1914	53	653	8.65	23.83	32.48	13.85	3.66	3.68	.43	.30	.07	.11	54.58
1915	57	750	7.20	24.45	31.65	16.51	3.01	3.52	.43	.33	.07	.15	55.67
Both years	110	1,403	7.90	24.15	32.05	15.23	3.32	3.60	.43	.31	.07	.13	55.14

TABLE 10.—*The various items of expense of keeping a cow 1 year, based on averages for 102 farms in the mixed group.*

State.	Number of farms.	Number of cows.	Average cost per cow.										
			Feed charges.			Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
			Summer.	Winter.	Entire year.								
Minnesota:													
1914	8	246	$5.04	$16.62	$21.66	$10.03	$2.73	$4.46	$0.43	$0.26	$0.07	$0.03	$39.67
1915	9	181	4.26	22.18	26.44	9.85	2.13	3.30	.43	.31	.09	.05	42.60
Both years	17	427	4.62	19.57	24.19	9.93	2.42	3.85	.43	.28	.08	.04	41.22
Iowa:													
1914	16	275	8.99	21.79	30.78	8.92	3.35	3.97	.43	.27	.12	.07	47.91
1915	24	382	7.74	21.77	29.51	10.50	3.20	3.84	.43	.29	.08	.20	48.05
Both years	40	657	8.24	21.78	30.02	9.86	3.26	3.89	.43	.28	.10	.15	47.99
Missouri:													
1914	2	27	6.75	21.88	28.63	9.60	2.74	3.45	.43	.26	.01	.00	45.12
1915	2	50	9.50	26.65	36.15	11.41	2.45	4.95	.43	.28	.11	.17	55.95
Both years	4	77	8.13	24.26	32.39	10.50	2.60	4.20	.43	.27	.06	.09	50.54
South Dakota:													
1914	5	244	7.14	17.19	24.33	5.79	.98	4.11	.43	.27	.00	.04	35.95
Nebraska:													
1914	8	152	10.76	22.28	33.04	7.32	1.22	3.82	.43	.50	.02	.18	46.53
1915	3	69	7.50	13.58	21.08	7.16	1.88	3.95	.43	.38	.05	.00	34.93
Both years	11	221	9.87	19.91	29.78	7.27	1.40	3.86	.43	.47	.03	.13	43.37
Kansas:													
1914	11	330	6.91	20.12	27.03	8.28	2.08	3.71	.43	.33	.01	.05	41.92
1915	14	438	6.92	17.37	24.29	8.22	1.21	4.03	.43	.40	.06	.11	38.75
Both years	25	768	6.91	18.58	25.49	8.24	1.60	3.89	.43	.37	.04	.08	40.14
Grand total or general average:													
1914	50	1,274	7.91	20.21	28.12	8.41	2.37	3.96	.43	.32	.06	.07	43.74
1915	52	1,120	6.97	20.37	27.34	9.62	2.37	3.84	.43	.33	.08	.14	44.15
Both years	102	2,394	7.47	20.30	27.73	9.03	2.37	3.90	.43	.32	.07	.10	43.95

purpose and the beef and baby-beef groups. This would naturally be expected, as the feed and labor costs for the cows milked would be practically the same as for those in the dual-purpose group, while these charges for the cows that are not milked would be practically the same as for those in the first two groups. This cost varies from $35.95 in South Dakota to $50.54 in Missouri, the difference being largely due to the difference in feed and labor costs in the two States. In Kansas and Nebraska the feed and labor costs are greater for 1914 than for 1915. In Missouri this condition is reversed. The reason for this may be that the Missouri cows, because of the early drying up of the pastures, did not produce enough milk to justify heavy feeding or extra care during the winter months.

Cost of keeping a cow in the partially-milked group.—The average cost of keeping a cow for 65 farms in the partially-milked group, as shown in Table 11, is $42.75, or $1.20 less than for those in the mixed group. The average feed bill, $26.05, made 61 per cent of the total cost, while the labor charge, $9.84, amounted to 23 per cent of the total. The feed cost in this group seems to reflect the influence of the drought but very little, although a number of the farms on which records were obtained suffered from its effect. The total cost of keeping a cow varied from $36.65 in Nebraska (two records) and $38.29 in Kansas to $45.42 in Indiana (not considering one farm in Illinois).

Cost of keeping a cow in the double-nursing group.—The average cost of keeping a cow for 22 farms in the double-nursing group (where some of the cows are made to support two calves) was $46.50, or $2.55 greater than for the mixed, and $3.75 greater than for the partially milked groups (see Table 12). The items of feed, $28.89, and labor, $9.80, are nearly the same as in those two groups. The average cost for Iowa, where this type of business is most prevalent, was $47.15. The records in the remaining States are too few in number to justify the drawing of any conclusions.

A comparison of the various items of expense in keeping a cow.—A comparison of the various items of expense for keeping a cow a year in each of the six groups is shown in Table 13. The proportion of the total cost that each of these charges constitutes is shown in Table 14. The feed charge, as previously stated, is the largest item of expense, varying from $24.69 for the cows in the beef group to $32.05 for those in the dual-purpose group. In the remaining groups this charge ranges from $26 to $29. It constitutes from 58.1 per cent of the total cost in the dual-purpose to 70.3 per cent in the beef and 71.5 per cent in the baby-beef group.

The labor item is the next heaviest charge in all except the baby-beef group. The heaviest labor cost is found in the dual-purpose

TABLE 11.—*The various items of expense of keeping a cow 1 year, based on averages for 65 farms in the partially-milked group.*

State.	Number of farms.	Number of cows.	Average cost per cow.										
			Feed charges.			Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
			Summer.	Winter.	Entire year.								
Indiana:													
1914	15	143	$8.85	$20.45	$29.30	$9.01	$2.59	$3.22	$0.43	$0.78	$0.02	$0.07	$45.42
Illinois:													
1914	1	12	10.50	23.38	33.88	8.42	3.75	4.50	.43	.35	.12	.00	51.45
Iowa:													
1914	3	75	7.33	19.65	26.98	8.16	2.27	3.95	.43	.27	.05	.27	42.38
1915	4	76	8.67	19.21	27.88	7.80	2.59	3.68	.43	.28	.12	.19	42.97
Both years	7	151	8.09	19.40	27.49	7.96	2.45	3.79	.43	.27	.09	.23	42.71
Missouri:													
1914	22	300	8.20	17.30	25.50	12.55	2.08	3.74	.43	.26	.07	.09	44.72
1915	11	176	7.81	15.55	23.36	8.61	1.59	3.74	.43	.28	.10	.21	38.32
Both years	33	476	8.07	16.71	24.78	11.24	1.92	3.74	.43	.27	.08	.13	42.59
Nebraska:													
1914	1	25	9.00	21.65	30.65	4.85	2.20	4.20	.43	.37	.14	2.00	44.84
1915	1	7	6.50	7.34	13.84	7.82	2.00	3.90	.43	.35	.12	.00	28.46
Both years	2	32	7.75	14.50	22.25	6.33	2.10	4.05	.43	.36	.13	1.00	36.65
Kansas:													
1914	6	83	5.96	17.24	23.20	8.14	2.87	3.30	.43	.32	.08	.00	38.34
1915	1	32	8.00	17.69	25.69	7.99	.43	3.00	.43	.45	.00	.00	37.99
Both years	7	115	6.25	17.30	23.55	8.11	2.53	3.26	.43	.34	.07	.00	38.29
Grand total or general average:													
1914	48	638	8.13	18.64	26.77	10.37	2.39	3.56	.43	.43	.06	.12	44.13
1915	17	291	7.95	16.05	24.00	8.34	1.78	3.69	.43	.29	.10	.18	38.81
Both years	65	929	8.08	17.97	26.05	9.84	2.23	3.59	.43	.40	.07	.14	42.75

TABLE 12.—*The various items of expense of keeping a cow 1 year, based on averages for 22 farms in the double-nursing group.*

State.	Number of farms	Number of cows.	Average cost per cow.										
			Feed charges.			Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
			Summer.	Winter.	Entire year.								
Indiana:													
1914	1	12	$12.00	$12.31	$24.31	$10.38	$4.24	$3.00	$0.43	$0.78	$0.00	$1.00	$44.14
Illinois:													
1914	2	15	11.50	21.08	32.58	13.08	2.88	3.82	.43	.36	.06	.00	53.21
Minnesota:													
1914	2	55	6.58	17.65	24.23	6.18	3.08	3.75	.43	.26	.00	.00	37.93
1915	1	25	4.80	19.65	24.45	4.64	2.92	3.30	.43	.31	.04	.00	36.09
Both years	3	80	5.99	18.31	24.30	5.67	3.02	3.60	.43	.28	.01	.00	37.31
Iowa:													
1914	1	17	10.97	16.83	27.80	9.84	4.41	3.75	.43	.28	.12	.00	46.63
1915	11	183	8.25	21.64	29.89	9.98	2.55	3.83	.43	.29	.09	.14	47.20
Both years	12	200	8.48	21.24	29.72	9.98	2.70	3.82	.43	.29	.09	.12	47.15
Nebraska:													
1915	1	9	7.50	19.85	27.35	6.09	5.92	3.30	.43	.35	.07	.00	43.51
Kansas:													
1915	3	65	8.27	21.50	29.77	12.03	2.97	4.50	.43	.40	.00	.33	50.43
Grand total or general average:													
1914	6	99	9.85	17.77	27.62	9.79	3.43	3.65	.43	.38	.04	.17	45.51
1915	16	282	7.99	21.38	29.37	9.80	2.86	3.89	.43	.31	.06	.16	46.88
Both years	22	381	8.50	20.39	28.89	9.80	3.01	3.82	.43	.33	.05	.17	46.50

group, amounting to $15.23, or 27.6 per cent of the total expense. The lowest labor charges are $3.11 in the baby-beef and $3.88 in the beef group. In the remaining three groups, where only the best cows are milked, the labor item ranges from $9.03 to $9.84 and forms from

TABLE 13.—*The various items of expense of keeping a cow 1 year, compared by groups.*

Group.	Number of farms.	Feed.	Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
Beef:										
1914	120	$24.60	$4.21	$1.67	$3.87	$0.43	$0.35	$0.06	$0.18	$35.37
1915	110	24.80	3.53	1.83	3.78	.43	.32	.06	.10	34.85
Both years	230	24.69	3.88	1.75	3.83	.43	.34	.06	.14	35.12
Baby beef:										
1914	25	26.94	3.09	2.83	4.13	.43	.31	.13	.11	37.97
1915	41	25.90	3.12	1.89	4.19	.43	.31	.09	.11	36.04
Both years	66	26.30	3.11	2.25	4.16	.43	.31	.10	.11	36.77
Dual purpose:										
1914	53	32.48	13.85	3.66	3.68	.43	.30	.07	.11	54.58
1915	57	31.65	16.51	3.01	3.52	.43	.33	.07	.15	55.67
Both years	110	32.05	15.23	3.32	3.60	.43	.31	.07	.13	55.14
Mixed:										
1914	50	28.12	8.41	2.37	3.96	.43	.32	.06	.07	43.74
1915	52	27.34	9.62	2.37	3.84	.43	.33	.08	.14	44.15
Both years	102	27.73	9.03	2.37	3.90	.43	.32	.07	.10	43.95
Partially milked:										
1914	48	26.77	10.37	2.39	3.56	.43	.43	.06	.12	44.13
1915	17	24.00	8.34	1.78	3.69	.43	.29	.10	.18	38.81
Both years	65	26.05	9.84	2.23	3.59	.43	.40	.07	.14	42.75
Double nursing:										
1914	6	27.62	9.79	3.43	3.65	.43	.38	.04	.17	45.51
1915	16	29.37	9.80	2.86	3.89	.43	.31	.06	.16	46.88
Both years	22	28.89	9.80	3.01	3.82	.43	.33	.05	.17	46.50

TABLE 14.—*The relation that each item of expense bears to the total cost of keeping a cow, by groups.*

Group.	Number of farms.	Feed.	Labor.	Equipment.	Interest.	Risk.	Taxes.	Insurance.	Veterinary.	Total.
Beef:		*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*
1914	120	69.55	11.90	4.72	10.94	1.22	0.99	0.17	0.51	100
1915	110	71.16	10.13	5.25	10.85	1.23	.92	.17	.29	100
Both years	230	70.30	11.05	4.98	10 91	1.22	.97	.17	.40	100
Baby beef:										
1914	25	70.95	8.14	7.45	10.88	1.13	.82	.34	.29	100
1915	41	71.86	8.66	5.24	11.63	1.19	.86	.25	.31	100
Both years	66	71.53	8.46	6.12	11.31	1.17	.84	.27	.30	100
Dual purpose:										
1914	53	59.51	25.37	6.71	6.74	.79	.55	.13	.20	100
1915	57	56.85	29.66	5.41	6.32	.77	.59	.13	.27	100
Both years	110	58.12	27.62	6.02	6.53	.78	.56	.13	.24	100
Mixed:										
1914	50	64.29	19.23	5.42	9.05	.98	.73	.14	.16	100
1915	52	61.92	21.79	5.37	8.70	.97	.75	.18	.32	100
Both years	102	63.09	20.55	5.39	8.87	.98	.73	.16	.23	100
Partially milked:										
1914	48	60.66	23.50	5.42	8.07	.97	.97	.14	.27	100
1915	17	61.84	21.49	4.58	9.51	1.11	.75	.26	.46	100
Both years	65	60.93	23.01	5.22	8.40	1.01	.94	.16	.33	100
Double nursing:										
1914	6	60.69	21.51	7.54	8.02	.95	.84	.08	.37	100
1915	16	62.65	20.90	6.10	8.30	.92	.66	.13	.34	100
Both years	22	62.13	21.08	6.47	8.21	.92	.71	.11	.37	100

20 to 23 per cent of the total cost. The interest charge is second to the feed cost in the baby-beef group, amounting to $4.16, or 11.3 per cent of the total charge. In the remaining five groups the interest charge ranks third, varying from 6.5 per cent for the dual-purpose to 10.9 per cent for the beef group.

The equipment charge, which ranks fourth in importance, varies from $1.75 for beef animals to $3.32 for dual-purpose cows. As will be seen in Table 14, the equipment charge constitutes from 5 to 6.5 per cent of the total cost. The item of risk, which amounts to 43 cents, forms approximately three-fourths to 1¼ per cent, while taxes, insurance, and veterinary expenses taken together approximate a little over 1 per cent of the total cost.

Methods used in obtaining the various costs.

Feed.—The feed year, beginning with May 1 and ending with April 30, is divided into the summer, or grazing, period and the winter feeding period. The grazing season usually runs from May 1 until approximately the 1st of November, although in Kansas and Nebraska and on individual farms in the other States the stock are turned out as early as the 1st of April. On some of the farms in Missouri, Kansas, and southern Iowa the stock are allowed to run on pasture or are grazed on supplemental grain crops all winter, receiving extra roughage and grain during bad weather. In some regions, especially in Iowa, the farmers usually supplement the regular pasture by giving the cattle the run of the meadows for a month to six weeks during September and October, after which they are usually turned into the cornstalk fields.

Because of the drought that prevailed in 1913, many of the pastures dried up in early summer, necessitating the feeding of extra hay and grain. This was especially true of farms in the dual-purpose group. A number of the farmers also fed green-corn fodder when their pastures began to fail. As the summer of 1914 was much more favorable, the feeding of additional roughage while the stock were on pasture was not nearly so prevalent as in the preceding year, although the carrying capacity of the pastures in some sections, notably Kansas, was still much lower than normal. This supplemental roughage, wherever it is a factor, has been included with the summer feed.

The winter feeding season has, for convenience in tabulation, been figured as beginning with the time the cattle were turned on the stalk fields, which is about November 1. The majority of the cattle run on these fields, where they are usually fed some hay, especially in stormy weather, until January 1, and some of them are allowed to run until April 1. Winter feeding usually begins about January 1 and continues until approximately May 1, when the cattle are turned on pasture. The heaviest feeding is usually practiced from the 1st of February to the middle of April or 1st of May, the average farmers feeding from three-fourths to 1 ton of hay per head, and usually some grain, during this period.

Labor.—The labor charge is based on the total number of hours of man labor and horse labor spent on each farm in caring for the breeding herd. The man labor was figured at 15 cents an hour, while horse labor was considered worth 10 cents an hour. These prices are higher than some farmers estimated them; they are, however, much less than many farmers actually pay. They are based on figures obtained from detailed cost accounting work of a number of years' duration on several farms in this region.

Equipment.—The equipment charges were worked up in the following manner: First, the building charges were obtained by taking an inventory of that part of the buildings actually used by the cattle. It was estimated that interest, taxes, insurance, and depreciation on the buildings would amount to approximately 10 per cent. Multiplying the total charge by this figure, the yearly charge for the herd is obtained. This yearly charge was divided by the total number of animal units using the building (considering three calves as equal to one animal unit), which gave the charge for each animal unit. The yard charges were figured in the same manner, except that a charge of 6 per cent was used to cover interest and taxes on land and the maintenance of fences and other minor equipment. A farm on which the equipment charge was $2.66 is shown in Plate IV, figure 2. The barns and lots are characteristic of those found on farms in the corn belt that are producing beef animals.

Interest.—Interest on cattle has been figured at 6 per cent per annum on the average inventory for one year. This figure was assumed to be a fair one, although it is a little less than the average rate of live-stock loans in these States. It is, however, a trifle higher than the average loans on real estate. The interest charges in the different groups vary, of course, according to the valuation of the animals, being greatest on the animals in the baby-beef group and least on the dual-purpose cows.

Risk.—The term "risk," as used in this report, designates the loss by death which is not covered by insurance. Where animals that were lost were insured, these were considered as having been sold to the insurance companies. In most instances the losses incurred were not due to any lack of care on the part of the owners, but rather to circumstances which could not have been forestalled. Consequently, it was thought best not to figure this loss against any individual farm or group of farms, but rather to prorate it equally among all. The risk was obtained by finding the total value of all cows lost and dividing this figure by the total number of cows on which records were obtained. The average risk, based on the two years' records, amounted to 43 cents a cow, there being a loss of approximately eight-tenths of 1 per cent.

Taxes.—Few of the farmers visited could tell the amount of taxes paid on live stock without examining their tax receipts. This method was impracticable because of the time entailed, and in order that a correct estimate of taxes might be made, data were procured from the county treasurers of those counties in which records were obtained showing the average tax per head on the different classes of cattle. The tax varies from 24 to 38 cents per head on cows, and from 27 to 39 cents per head on bulls, except in Indiana where, on each, it amounts to 78 cents per head.

Insurance.—The insurance carried on cattle was almost altogether for protection against fire, lightning, or tornado. Only one health policy on live stock was found. The insurance charge was obtained by prorating the total amount of the premium paid among the live stock insured, according to their value.

Approximately 70 per cent of the farmers carried insurance on their cattle, the figures varying from less than 20 per cent in South Dakota and Indiana to about 85 per cent in Minnesota. Of the farmers running baby-beef herds, 75 per cent carry insurance on their cattle, while 60 per cent of those in the dual-purpose group and 50 per cent of those with strictly beef herds insured their cattle. About two-thirds of this insurance is carried in mutual companies, which are usually county organizations. The remaining one-third is old-line insurance. The largest herds are frequently not insured, as their owners consider that during a period of years it is cheaper to take the risk than to pay the premiums. This charge constitutes from one-tenth to three-tenths of 1 per cent of the total cost.

Veterinary expenses.—The veterinary expenses on the cows, and on the calves up to the time of weaning, have been figured against the cows. After weaning time or, in case of skim-milk calves, after they are put on winter feed at 6 to 8 months of age, the calves bear their own veterinary charges, which are mostly for vaccination against blackleg.

About 2 per cent of the farms visited reported trouble with contagious abortion. It is probable that another 2 per cent were troubled with this disease, as there were a number of farms visited where the calf crop was abnormally low, but where the farmer was unable to give any explanation as to the reason. While the percentage of farms having contagious abortion is comparatively low, the heavy loss incurred on those farms where it is found makes it apparent that the disease is an important factor to be considered by the man who is raising cattle.

COST OF KEEPING A BULL.

The average farm cost of keeping a bull for a year in the baby-beef group, where the animals are higher priced and better cared for than in other groups, is $50.61 (see Table 15). Many of these bulls

are kept apart from the herd and fed extra grain rations during a part or all of the year. The lowest maintenance cost ($41.23) is in the beef group, where bulls are mostly allowed to run with the cows. The cost of maintaining a bull in the remaining groups varied from $43.39 in the partially-milked to $47.53 in the mixed group. The lowest average maintenance cost (ignoring groups with less than 10 records) is $33.77 for 16 bulls in the Nebraska beef group for 1915, while the highest average maintenance cost is $55.79 for each of the 16 bulls in the baby-beef group in Iowa in 1914.

TABLE 15.—*The average maintenance cost per farm of keeping a bull 1 year in each of the six groups.*

State.	Beef.		Baby beef.		Dual purpose.		Mixed.		Partially milked.		Double nursing.	
	Number of bulls.	Cost.	Number of bulls.	Cost.	Number of bulls.	Cost.	Number of bulls.	Cost.	Number of bulls.	Cost.	Number of bulls.	Cost.
Indiana:												
1914	6	$42.89	.....	.....	1	$33.20	.....	.....	12.5	$42.39	1	$45.53
Illinois:												
1914	12	35.13	3	$39.23	2	32.77	.....	.....	1	52.57	1	27.02
Minnesota:												
1914	2	25.49	.....	.....	5	48.89	7	$42.81	.....	.....	2	42.52
1915	9	44.36	.....	.....	22	45.58	8	49.08	.....	.....	1	40.89
Both years.	11	39.65	.....	.....	27	46.29	15	46.12	.....	.....	3	41.98
Iowa:												
1914	24	44.88	16	55.79	22.75	52.79	16	53.37	3	45.20	1	49.58
1915	62.5	47.41	32	52.07	14	49.65	21.5	49.67	4	46.76	11	50.01
Both years.	86.5	46.65	48	53.32	36.75	51.59	37.5	51.15	7	46.09	12	49.98
Missouri:												
1914	23.5	35.50	2	44.12	3	46.43	2	46.58	21	44.10	.....	.....
1915	11	35.21	2	44.29	1	39.12	3	61.22	11	45.35	.....	.....
Both years.	34.5	35.41	4	44.21	4	43.99	5	53.90	32	44.52	.....	.....
South Dakota:												
1914	6	32.42	.....	.....	4	42.35	7	33.18	.....	.....	.....	.....
Nebraska:												
1914	28	41.88	8	49.02	3	39.04	7	42.58	1	47.54	.....	.....
1915	16	33.77	4	46.97	2	44.77	3	37.84	.....	.....	1	52.86
Both years.	44	38.90	12	48.34	5	41.33	10	41.28	1	23.77	.....	.....
Kansas:												
1914	27.5	42.36	.....	.....	8.5	37.24	11.5	43.06	6	41.10	.....	.....
1915	28	40.68	14	49.07	15	42.81	15	50.59	1	46.15	2	28.01
Both years.	55.5	41.45	.....	.....	23.5	40.75	26.5	47.28	7	41.82	.....	.....
Grand total or general average:												
1914	129	39.71	29	51.45	49.75	46.11	50.5	45.40	44	43.51	5	39.04
1915	126.5	42.89	52	50.11	54	45.68	50.5	49.58	16	43.06	15	45.49
Both years.	255.5	41.23	81	50.61	103.75	45.89	101	47.53	60	43.39	20	43.73

While the items of expense for maintaining a bull a year are the same as those enumerated for keeping a cow, they nevertheless vary in amount considerably from those for keeping a cow. A comparison of Tables 13 and 15 shows that in the baby-beef group the average farm cost of keeping a bull is $13.84 greater than for a cow. This difference is partly due to the larger charges for interest, risk, taxes, and insurance, resulting from the greater value of the bull; and also, as previously explained, to an increased cost of feed and labor. The bulls in the beef group cost $6.11 more for a year's keep than did the cows. On the other hand, the bulls in the dual-

purpose group were carried for $9.25 a year less than the cows, the latter, because of the labor of milking, naturally having a much higher labor cost. In the three remaining groups the year's maintenance charges for a bull were very nearly the same as for a cow, the bulls in the double-nursing group costing $2.77 less, while those in the mixed and partially-milked groups cost $3.58 and 64 cents more, respectively.

The feed bill for bulls, which was worked up in exactly the same manner as for cows, was a little greater than that for the latter in the beef and baby-beef groups. In the mixed group the feed charges for bulls and cows were practically the same, while in the remaining three groups they were a little less for the bulls. The labor costs, also worked up in the same manner as for the cows, were a little greater for bulls than for cows in the baby-beef group, practically the same in the beef, a little less in the mixed, partially-milked, and double-nursing, and only one-third as great in the dual-purpose group. The equipment charges, as previously explained, were prorated among the animals using the buildings, and were generally the same for bulls as for the cows. The interest charge is naturally greater than for the cows, this charge averaging from $8.61 for the bulls in the baby-beef group to $4.48 for those in the partially-milked group. Insurance and taxes were obtained in the same manner as for cows, and were slightly greater than for the latter.

The risk, or loss by death, on bulls was naturally greater than for cows. In the first place, the percentage of loss was double that for cows, being 1.9 per cent, while the inventory value was also nearly double. This risk charge, because of the loss of some expensive bulls, amounted to $2.47 per head. As the veterinary charges were for only a few bulls, these, when prorated among all the animals, become almost negligible.

In getting data on the depreciation of bulls, it was found that under certain circumstances the animals depreciated in value, while in other instances there was an actual appreciation. The factors governing the appreciation or depreciation of these animals are discussed on page 36.

NET COST OF MAINTAINING THE BREEDING HERD.

The preceding discussion has been confined to the consideration of the various items of expense that make up the gross cost of keeping a cow or a bull for one year on the average corn belt farm. In determining the actual or net cost of keeping such animals, there are certain items of credit which must also be considered.

NET COST OF MAINTAINING A COW.

In determining the net cost of maintaining a cow, the two principal credits to be considered are milk and manure. In addition to these, there is a small credit (shown in Table 27) for extra calves in the beef group. It is probable that where the breeding herd is fed corn fodder or ear corn there should in some instances be a small credit for pork. This figure, however, was unobtainable, and would be too small to have any appreciable effect on the results.

The milk credit.—There were no milk credits in the beef or the baby-beef groups, as it was found that where only one or two of the best cows were milked and the milk used for household purposes the extra care required in milking these cows and handling their calves usually offset the value of the milk products. In the other four groups, the milk credits consist of the milk products that were sold; the milk, cream, and butter that were used on the home table; and the whole and skim milk fed to calves and hogs. The value of the milk products sold from the majority of the farms was estimated on the basis of butter fat at 25 cents per pound. On several farms cream was sold at 75 or 80 cents per gallon, in which cases these figures were used. A value of 25 cents per pound for butter fat was also placed on the butter and cream used in the house. The milk used by the family and that fed to the calves was valued at 9 cents per gallon. The skim milk fed to the calves and pigs was credited at 20 cents per hundredweight. The values given the various milk products were based on the average prices which prevailed throughout the region during the years covered by the records.

In the dual-purpose group, the average value per cow of milk products sold and used on the farm is $43.38. (See Table 16.) The value of milk products sold is $13.33 less for 1914 than for 1915. This difference may be attributed to the early drying up of the pastures because of the drought of 1913. The milk credits for 1914 are less than those for 1915 in all of the States except Minnesota, where normal climatic conditions prevailed. The value of the milk products per cow milked is greatest in the double-nursing group, amounting to $51.38. It seems that where this practice is followed heavier milkers are kept than are found on the average farm. When the value of the total milk products of the farm is prorated among all of the cows in the herd, the average milk credit for a cow drops to $28.24.

In the mixed group, where 37 per cent of the cows are milked, the value of the milk products for those milked is $49.15, and is slightly lower than for the cows milked in the double-nursing group. These credits are larger than for the cows in the dual-purpose group, as only the best cows are milked. When the milk products are prorated among all the cows in the herd, the credit drops to $20.29, which is

the figure used in the tabulations. In the partially-milked group, where the calves get a part of the milk, the average credit per cow is $16.88. In spite of the fact that the majority of farms in this group were affected by the drought, the milk credits are greater in the 1914 records than in those for 1915. This difference may be accounted for by the fact that different farms were visited in each year and that a larger percentage of the milk was taken on the farms visited the first year.

TABLE 16.—*The average value of milk products of the cows that were milked.*

State.	Dual purpose.			Mixed.			Partially milked.			Double nursing.		
	Number of farms.	Number of cows per farm.	Value per cow.	Number of farms.	Number of cows per farm.	Value per cow.	Number of farms.	Number of cows per farm.	Value per cow.	Number of farms.	Number of cows per farm.	Value per cow.
Indiana:												
1914	1	8.0	$20.70	.....	.....	.....	15	9.6	$15.75	1	12.0	$11.38
Illinois:												
1914	3	8.3	30.48	.....	.....	.....	1	12.0	37.20	2	3.5	43.88
Minnesota:												
1914	6	12.2	44.94	8	7.6	$50.88	.....	.....	.....	2	8.5	38.61
1915	22	16.0	45.78	9	8.3	55.55	.....	.....	.....	1	7.0	57.32
Both years.	28	15.2	45.60	17	8.0	53.35	.....	.....	.....	3	8.0	44.85
Iowa:												
1914	24	11.6	39.56	16	6.5	50.88	3	25.0	20.27	1	8.0	39.38
1915	15	12.1	53.31	24	8.2	52.48	4	19.0	17.44	11	8.1	53.33
Both years.	39	11.8	44.85	40	7.6	51.84	7	21.6	18.65	12	8.1	52.17
Missouri:												
1914	2	20.0	21.58	2	7.5	34.80	22	13.6	17.15	.....	.....	.....
1915	1	10.0	48.63	2	15.5	39.74	11	16.0	14.26	.....	.....	.....
Both years.	3	16.7	30.60	4	11.5	37.27	33	14.4	16.19	.....	.....	.....
South Dakota:												
1914	4	11.0	40.36	5	14.8	48.53	.....	.....	.....	.....	.....	.....
Nebraska:												
1914	3	10.7	27.45	8	6.2	41.36	1	25.0	11.60	.....	.....	.....
1915	2	6.5	62.43	3	8.3	49.51	1	7.0	20.39	1	3.0	59.33
Both years.	5	9.0	41.45	11	6.8	43.59	2	16.0	15.99	.....	.....	.....
Kansas:												
1914	10	15.2	31.52	11	9.2	43.09	6	13.8	19.84	.....	.....	.....
1915	17	11.4	50.52	14	10.4	49.13	1	32.0	8.57	3	13.3	70.44
Both years.	27	12.8	43.49	25	9.9	46.47	7	16.4	18.23	.....	.....	.....
Grand total or general average:												
1914	53	12.32	36.48	50	8.10	46.76	48	13.30	17.54	6	7.33	35.96
1915	57	13.16	49.81	52	9.14	51.45	17	17.12	15.04	16	8.69	57.16
Both years.	110	12.75	43.38	102	8.63	49.15	65	14.29	16.88	22	8.32	51.38

The manure credit.—The manure credit was obtained by getting the farmer's estimate of the number of loads of manure hauled out on his farm and what he considered it to be worth per load. Those farmers who made no attempt to utilize manure gave it no value, while a few farmers considered it worth as much as $5 a load to them. The majority placed a value of $1 a load, in the barnyard, on manure. The total farm value of manure was prorated among the animals which produced it. In Kansas, where the farmers have only recently begun to realize the importance of manure in maintaining fertility, its value was the lowest, while in Iowa and Illinois, where the land is

high-priced, its value was much greater. The average manure credit per animal unit was $4.50, this varying from $3.26 in the mixed group in Kansas to $7.37 for the dual-purpose animals in Iowa.

Net cost of keeping a cow in the beef group.—The average net cost per farm of keeping a beef cow is shown in the first part of Table 17. The principal credit in this group is for manure, which averages $4.77, ranging from $3.43 in Kansas to $5.90 in Iowa. In addition, there is also a small credit, averaging 2 cents, for extra calves. This is due to the fact that on one of the Nebraska farms six additional calves were purchased and were given to some of the best cows to support, in addition to their own calves. These calves were credited to the herd at the difference between their inventory value at weaning time and their purchase cost, which credit amounts to $3.79 per cow.

The net cost of keeping a cow in this group averages $30.33, varying from $22.96 for six farms with 181 cows in South Dakota to $33.98 in Illinois.

Net cost of keeping a cow in the baby-beef group.—The net cost of keeping baby-beef cows, as shown in Table 18, is $31.38, the only credit being for manure, which averaged $5.39, ranging from $3.36 in Kansas to $5.84 in Iowa and $5.90 in Illinois.

Net cost of keeping a cow in the dual-purpose group.—In this group there are two credits to be considered: First, that for milk and its products; second, that for manure. The value of milk products per cow varies from $30.48 in Illinois (not considering the one farm in Indiana) to $45.60 in Minnesota. The effects of the drought of 1913 are strikingly shown in the credits for milk products in this group. With the exception of Minnesota, where the rainfall was normal both years, the pastures dried up early in midsummer of 1913. As a result, these credits averaged $13.33 less in the 1914 records than in those of the following year. In Iowa this difference amounted to $13.75, while in Kansas, where the drought was more severe, it amounted to $19. There was a still greater difference for the five Nebraska farms in this group.

Manure was worth from $4.27 in Kansas to $7.37 in Iowa and Illinois, its average value for the group being $5.69. This is slightly higher than the average manure credit for the baby-beef farms, and approximately $1 greater than in the beef group.

In three States the total credits for the farms visited in 1915 were greater than the cost of maintaining the cows, so that these animals, instead of having a debit to be carried over against the calves, actually presented the latter with a credit. In other words, the calves in these three States were produced without cost, and the cows had a credit for milk which, considering that this report deals with the

TABLE 17.—*The average net cost per farm of keeping breeding animals 1 year in the beef group.*

State.	Number of farms.	Cows.					Bulls.					
		Number.	Gross cost.	Credit for extra calves.	Manure credit.	Net cost.	Number.	Maintenance cost.	Depreciation.	Appreciation.	Manure credit.	Net cost.
Indiana:												
1914	6	99	$38.49	.....	$4.08	$34.41	6	$42.89	$4.12	.....	$4.08	$42.93
Illinois:												
1914	13	273	39.88	.....	5.90	33.98	12	35.13	1.48	.....	4.99	31.62
Minnesota:												
1914	3	67	32.71	.....	3.76	28.95	2	25.49	1.12	.....	2.51	24.10
1915	9	193	34.32	.....	3.76	30.56	9	44.36	.93	.....	3.76	41.53
Both years	12	260	33.92	.....	3.76	30.16	11	39.65	.97	.....	3.45	37.17
Iowa:												
1914	23	674	37.09	.....	5.90	31.19	24	44.88	13.95	.....	5.39	53.44
1915	53	1,686	37.51	.....	5.90	31.61	62.5	47.41	7.24	.....	5.57	49.08
Both years	76	2,360	37.39	.....	5.90	31.49	86.5	46.65	9.26	.....	5.51	50.40
Missouri:												
1914	24	447	34.32	.....	4.08	30.24	23.5	35.50	2.62	.....	3.74	34.38
1915	9	282	30.44	.....	4.08	26.36	11	35.21	.89	.....	4.08	32.02
Both years	33	729	33.26	.....	4.08	29.18	34.5	35.41	2.15	.....	3.83	33.73
South Dakota:												
1914	6	181	26.72	.....	3.76	22.96	6	32.42	10.04	.....	3.76	38.70
Nebraska:												
1914	24	679	32.65	.....	4.94	27.71	28	41.88	4.91	.....	4.94	41.85
1915	14	346	30.34	$0.27	4.94	25.13	16	33.77	.....	$3.91	4.58	25.28
Both years	38	1,025	31.80	.10	4.94	26.76	44	38.90	1.66	.....	4.81	35.75
Kansas:												
1914	21	1,123	36.95	.....	3.43	33.52	27.5	42.36	3.40	.....	3.43	42.33
1915	25	1,196	33.49	.....	3.43	30.06	28	40.68	9.94	.....	3.29	47.33
Both years	46	2,319	35.07	.....	3.43	31.64	55.5	41.45	6.95	.....	3.35	45.05
Grand total or general average:												
1914	120	3,543	35.37	.....	4.66	30.71	129	39.71	5.66	.....	4.36	41.01
1915	110	3,703	34.85	.04	4.89	29.92	126.5	42.89	5.40	.....	4.65	43.64
Both years	230	7,246	35.12	.02	4.77	30.33	255.5	41.23	5.54	.....	4.50	42.27

TABLE 18.—*The average net cost per farm of keeping breeding animals 1 year in the baby-beef group.*

State.	Number of farms.	Cows.				Bulls.					
		Number.	Gross cost.	Manure credit.	Net cost.	Number.	Maintenance cost.	Depreciation.	Appreciation.	Manure credit.	Net cost.
Illinois:											
1914	2	105	$30.91	$5.90	$25.01	3	$39.23	$22.79	.....	$5.90	$56.12
Iowa:											
1914	15	492	38.60	5.81	32.79	16	55.02	9.45	.....	5.81	58.66
1915	30	931	36.83	5.86	30.97	32	51.02	8.87	.....	5.66	54.23
Both years	45	1,423	37.42	5.84	31.58	48	52.36	9.06	.....	5.71	55.71
Missouri:											
1914	2	37	39.49	4.08	35.41	2	44.12	.....	6.78	4.08	33.26
1915	2	46	35.19	4.21	30.98	2	44.29	14.00	.....	4.21	54.08
Both years	4	83	37.34	4.15	33.19	4	44.21	3.61	.....	4.15	43.67
Nebraska:											
1914	6	220	38.26	4.94	33.32	8	49.02	14.01	.....	4.94	58.09
1915	3	114	27.82	4.94	22.88	4	46.97	2.22	.....	4.94	44.25
Both years	9	334	34.79	4.94	29.85	12	48.34	10.08	.....	4.94	53.48
Kansas:											
1915	6	336	36.49	3.36	33.13	14	49.07	.....	5.67	3.36	40.04
Grand total or general average:											
1914	25	854	37.97	5.46	32.51	29	51.45	10.31	.....	5.47	56.29
1915	41	1,427	36.04	5.35	30.69	52	50.11	6.51	.....	5.20	51.42
Both years	66	2,281	36.77	5.39	31.38	81	50.61	7.95	.....	5.30	53.26

cost of raising beef animals, is carried over for the benefit of the calves.

The average net cost of keeping a cow for one year in this group was $6.07, ranging from $24.22 for the 1914 records in Illinois to a credit of $3.04 for five farms in Nebraska. For 1914 the average net cost of keeping a cow is $12.02, while for 1915 it is only 53 cents. This would indicate that under normal conditions the cows in this group are very nearly self-supporting.

Net cost of keeping a cow in the mixed group.—The average net cost of maintaining a cow in the mixed group (see Table 20) is $19.23, ranging from $15.92 in South Dakota to $25.13 in Missouri. In this group the milk credits averaged $20.29, while manure credits were $4.43 per cow. The manure on the farms in this group is generally not quite as well cared for as on the farms in the beef and dual-purpose groups.

Net cost of keeping a cow in the partially-milked group.—For the 65 farms in this group, the average net cost of keeping a cow is $21.32, being nearly the same for both 1914 and 1915. This cost (not considering one farm in Illinois) ranges from $15.39 in Nebraska to $25.32 in Indiana in 1914. The average milk credit is $16.88, while the average manure credit is $4.55.

Net cost of keeping a cow in the double-nursing group.—The average net cost of keeping a cow on the 22 farms in this group is $13.24, varying from $28.88 and $28.21 in Indiana and Illinois, respectively, to a credit of $5.61 for three farms in Kansas in 1915. The milk credits average $28.24, while the manure credits are $5.02.

NET COST OF MAINTAINING A BULL.

In determining the cost of keeping a bull there is a credit for manure which is the same as for the cows. In addition to the manure credit, the items of depreciation and appreciation must also be considered. As previously stated, the item of depreciation was not figured with the other expenses of maintaining a bull for a year, as it frequently occurred that the bulls actually appreciated in value. In getting data to determine what the depreciation might be, the difference between the purchase and the sale price of the bulls, as well as the length of time that the bulls were kept, was considered.

The farmers with small herds usually paid less for their bulls than those with large herds. Many of the farmers with small herds followed the practice of buying calves or yearlings of good quality, which were sold, after one or two years' use, for considerably more than their purchase price. The majority of the farmers having 25 or more cows purchased older bulls, which were usually of excellent quality and were kept for three to five years. In general, it was

TABLE 19.—*The average net cost per farm of keeping breeding animals 1 year in the dual-purpose group.*

State.	Number of farms.	Cows.					Bulls.					
		Number.	Gross cost.	Milk credit.	Manure credit.	Net cost.[1]	Number.	Maintenance cost.	Depreciation.	Appreciation.	Manure credit.	Net cost.
Indiana:												
1914	1	8	$39.45	$20.70	$5.07	$13.68	1	$33.20	.....	$11.17	$5.07	$16.96
Illinois:												
1914	3	25	62.07	30.48	7.37	24.22	2	32.77	.....	7.06	4.91	20.80
Minnesota:												
1914	6	73	62.61	44.94	4.68	12.99	5	48.89	.....	1.63	3.90	43.36
1915	22	352	54.07	45.78	4.68	3.61	22	45.58	.....	8.04	4.68	32.86
Both years.	28	425	55.90	45.60	4.68	5.62	27	46.29	.....	6.67	4.51	35.11
Iowa:												
1914	24	279	57.73	39.56	7.37	10.80	22.75	52.79	1.12	.....	7.37	46.54
1915	15	182	57.83	53.31	7.37	−2.85	14	49.65	1.08	.....	6.88	43.85
Both years.	39	461	57.77	44.85	7.37	5.55	36.75	51.59	1.10	.....	7.18	45.51
Missouri:												
1914	2	40	48.38	21.58	5.07	21.73	3	46.43	14.09	.....	5.07	55.45
1915	1	10	46.23	48.63	5.07	−7.47	1	39.12	.....	25.00	5.07	9.05
Both years.	3	50	47.66	30.60	5.07	11.99	4	43.99	1.06	.....	5.07	39.98
South Dakota:												
1914	4	44	47.50	40.36	4.68	2.46	4	42.35	2.63	.....	4.68	40.30
Nebraska:												
1914	3	32	39.97	27.45	6.16	6.36	3	39.04	7.55	.....	6.16	40.43
1915	2	13	51.45	62.43	6.16	−17.14	2	44.77	1.25	.....	6.16	39.86
Both years.	5	45	44.57	41.45	6.16	−3.04	5	41.33	5.03	.....	6.16	40.20
Kansas:												
1914	10	152	49.93	31.52	4.27	14.14	8.5	37.24	.....	4.02	3.84	29.38
1915	17	193	56.87	50.52	4.27	2.08	15	42.81	.....	8.90	3.77	30.14
Both years.	27	345	54.30	43.49	4.27	6.54	23.5	40.75	.....	7.09	3.79	29.87
Grand total or general average:												
1914	53	653	54.58	36.48	6.08	12.02	49.25	46.11	0.11	.....	5.77	40.45
1915	57	750	55.67	49.81	5.33	0.53	54	45.68	.....	5.87	5.04	34.77
Both years.	110	1,403	55.14	43.38	5.69	6.07	103.25	45.89	.....	2.98	5.40	37.51

[1] Minus quantities indicate excess of credits above costs.

TABLE 20.—*The average net cost per farm of keeping breeding animals 1 year in the mixed group.*

State.	Number of farms.	Cows.					Bulls.					
		Number.	Gross cost.	Milk credit.	Manure credit.	Net cost.	Number.	Maintenance cost.	Depreciation.	Appreciation.	Manure credit.	Net cost.
Minnesota:												
1914	8	246	$39.67	$14.29	$3.56	$21.82	7	$42.81	$11.72	.....	$3.12	$51.41
1915	9	181	42.60	25.75	3.56	13.29	8	49.08	2.00	.....	3.17	47.91
Both years.	17	427	41.22	20.35	3.56	17.31	15	46.12	6.58	.....	3.14	49.56
Iowa:												
1914	16	275	47.91	18.24	5.62	24.05	16	53.37	15.94	.....	5.62	63.69
1915	24	382	48.05	27.63	5.62	14.80	21.5	49.67	.....	$2.84	5.15	41.68
Both years.	40	657	47.99	23.87	5.62	18.50	37.5	51.15	4.67	.....	5.34	50.48
Missouri:												
1914	2	27	45.12	19.15	3.88	22.09	2	46.58	.....	8.52	3.88	34.18
1915	2	50	55.95	23.90	3.88	28.17	3	61.22	.....	4.16	3.88	53.18
Both years.	4	77	50.54	21.53	3.88	25.13	5	53.90	.....	6.34	3.88	43.68
South Dakota:												
1914	5	244	35.95	16.47	3.56	15.92	7	33.18	9.17	.....	2.85	39.50
Nebraska:												
1914	8	152	46.53	16.07	4.70	25.76	7	42.58	3.37	.....	4.11	41.84
1915	3	69	34.93	17.90	4.70	12.33	3	37.84	.....	.91	4.70	32.23
Both years.	11	221	43.37	16.57	4.70	22.10	10	41.28	2.20	.....	4.27	39.21
Kansas:												
1914	11	330	41.92	16.16	3.26	22.50	11.5	43.06	1.84	.....	3.26	41.64
1915	14	438	38.75	17.18	3.26	18.31	15	50.59	.....	.91	3.26	46.42
Both years.	25	768	40.14	16.73	3.26	20.15	26.5	47.28	.30	.....	3.26	44.32
Grand total or general average:												
1914	50	1,274	43.74	16.66	4.35	22.73	50.5	45.40	8.49	.....	4.11	49.78
1915	52	1,120	44.15	23.79	4.51	15.85	50.5	49.58	.....	1.43	4.22	43.93
Both years.	102	2,394	43.95	20.29	4.43	19.23	101	47.53	3.43	.....	4.17	46.79

found that bulls costing under $80 appreciated in value, while animals costing from $80 to $110 sell approximately at cost. The majority of animals costing in excess of $110 were sold at a sacrifice. The more valuable the bull the greater the depreciation.

Net cost of keeping a bull in the beef group.—The average net cost of keeping a bull in the beef group for one year is shown in the second part of Table 17. In this group the average depreciation was $5.54 per bull, varying from 97 cents in Minnesota to $10.04 in South Dakota. There was an average appreciation of $3.91 for 16 bulls found on Nebraska farms in 1915.

The manure credit averaged $4.50 per bull, or a little lower than that for cows ($4.77). While the same credit per animal unit was used in both cases, the credit for the bulls is less because of the fact that these are averaged according to the number of farms, and as there were several farms on which there were no bulls, the average would naturally be less.[1]

Net cost of keeping a bull in the baby-beef group.—The average net cost of keeping a bull in the baby-beef group was $53.26, or nearly $11 greater than for a beef bull (see second part of Table 18). The average depreciation per bull was $7.95, ranging from an appreciation of $5.67 in Kansas to a depreciation of $22.79 in Illinois. Some of the Kansas bulls were actually higher priced than those in Illinois. However, they were on large farms that maintained pure-bred herds and where some of the best bull calves were sold to ranchers and other stockmen. These farmers, being located in a region where large numbers of bulls are produced for the range, were able to dispose of their bulls to ranchers at a price greater than their inventory value. The heavy depreciation of the Illinois bulls was due to the fact that two of the bulls on one farm were valued at $250 each. As their owner had no way of disposing of his bulls except through the stock markets for approximately $100 each, there would naturally be a total depreciation of $150 per head, which, considering that the animals were kept three years, would give an annual depreciation charge of $50 per head.

It will be noticed that in a number of States there is a wide difference in the depreciation figures for the two years. For instance, in Missouri there was a depreciation of $6.78 in 1914, as compared with an appreciation of $14 for the 1915 records. These differences are partly due to the fact that the records are from different farms, and frequently from different localities. They are also partly due to the drought of 1913, since many of the bulls sold in the fall of that year were not in as good flesh as those sold in the fall of the following year.

[1] In Illinois, two of the 13 farms kept no bull. One of the remaining 11 farms had two bulls. The total average credit per bull per farm was $64.90 (11 times $5.90), which, divided by 13 farms, equals $4.99.

TABLE 21.—*The average net cost per farm of keeping breeding animals 1 year in the partially-milked group.*

State.	Number of farms.	Cows.					Bulls.					
		Number.	Gross cost.	Milk credit.	Manure credit.	Net cost.	Number.	Maintenance cost.	Depreciation.	Appreciation.	Manure credit.	Net cost.
Indiana:												
1914	15	143	$45.42	$15.75	$4.35	$25.32	12.5	$42.39	.....	$4.64	$3.77	$33.98
Illinois:												
1914	1	12	51.45	37.20	6.30	7.95	1	52.57	.....	11.17	6.30	35.10
Iowa:												
1914	3	75	42.38	20.27	6.30	15.81	3	45.20	.....	3.45	6.30	35.45
1915	4	76	42.97	17.44	6.30	19.23	4	46.76	$0.19	.....	6.30	40.65
Both years.	7	151	42.71	18.65	6.30	17.76	7	46.09	.....	1.37	6.30	38.42
Missouri:												
1914	22	300	44.72	17.15	4.35	23.22	21	44.10	.....	4.75	4.15	35.20
1915	11	176	38.32	14.26	4.35	19.71	11	45.35	.....	7.58	4.35	33.42
Both years.	33	476	42.59	16.19	4.35	22.05	32	44.52	.....	5.69	4.22	34.61
Nebraska:												
1914	1	25	44.84	11.60	5.27	27.97	1	47.54	.00	.00	5.27	42.27
1915	1	7	28.46	20.39	5.27	2.80	0	.....	.....	.....	.....	.....
Both years.	2	32	36.65	15.99	5.27	15.39	1	23.77	.00	.00	2.63	21.14
Kansas:												
1914	6	83	38.34	19.84	3.67	14.83	6	41.10	.....	6.22	3.67	31.21
1915	1	32	37.99	8.57	3.67	25.75	1	46.15	.....	8.57	3.67	33.91
Both years.	7	115	38.29	18.23	3.67	16.39	7	41.82	.....	6.56	3.67	31.59
Grand total or general average:												
1914	48	638	44.13	17.54	4.45	22.14	44	43.51	.....	4.86	4.17	34.48
1915	17	291	38.81	15.04	4.82	18.95	16	43.06	.....	5.36	4.51	33.19
Both years.	65	929	42.75	16.88	4.55	21.32	60	43.39	.....	4.98	4.27	34.14

TABLE 22.—*The average net cost per farm of keeping breeding animals 1 year in the double-nursing group.*

State.	Number of farms.	Cows.					Bulls.					
		Number.	Gross cost.	Milk credit.	Manure credit.	Net cost.[1]	Number.	Maintenance cost.	Depreciation.	Appreciation.	Manure credit.	Net cost.
Indiana:												
1914	1	12	$44.14	$11.38	$3.88	$28.88	1	$45.53	$0.00	$0.00	$3.88	$41.65
Illinois:												
1914	2	15	53.21	19.24	5.76	28.21	1	27.02	.....	5.00	2.88	19.14
Minnesota:												
1914	2	55	37.93	12.93	3.66	21.34	2	42.52	4.90	.....	3.66	43.76
1915	1	25	36.09	16.72	3.66	15.71	1	40.89	3.33	.....	3.66	40.56
Both years.	3	80	37.31	14.19	3.66	19.46	3	41.98	4.38	.....	3.66	42.70
Iowa:												
1914	1	17	46.63	18.53	5.76	22.34	1	49.58	.00	.00	5.76	43.82
1915	11	183	47.20	29.54	5.76	11.90	11	50.01	3.43	.....	5.76	47.68
Both years.	12	200	47.15	28.62	5.76	12.77	12	49.98	3.14	.....	5.76	47.36
Nebraska:												
1915	1	9	43.51	27.38	4.82	11.31	1	52.86	.00	.00	4.82	48.04
Kansas:												
1915	3	65	50.43	52.69	3.35	−5.61	2	28.01	.....	3.33	2.23	22.45
Grand total or general average:												
1914	6	99	45.51	15.71	4.75	25.05	5	39.04	.....	.03	3.79	35.22
1915	16	282	46.88	32.94	5.12	8.82	15	45.49	1.94	.....	4.91	42.52
Both years.	22	381	46.50	28.24	5.02	13.24	20	43.73	1.40	.....	4.60	40.53

[1] Minus quantity indicates excess of credits above costs.

Net cost of keeping a bull in the dual-purpose group.—The average net cost of keeping a bull in the dual-purpose group (as shown in the second part of Table 19) is $37.51, or approximately $5 less than for beef bulls. This is true, even though the maintenance charge for the dual-purpose bulls was $4.66 greater than for the beef bulls. This lower net cost is largely due to the fact that much cheaper bulls are used in the dual-purpose herds, which animals usually sold for more than their purchase prices. In this group there is an average appreciation for all bulls of $2.98, which varies from a depreciation of $5.03 in Nebraska to an appreciation of $7.09 in Kansas (ignoring scattered individual farms). The manure credit averages $5.40 per bull.

Net cost of keeping a bull in the mixed group.—The average net cost of keeping a bull in the mixed group is $46.79 (see Table 20), ranging from $39.21 in Nebraska and $39.50 in South Dakota to $49.56 in Minnnesota and $50.48 in Iowa. There is an average depreciation charge of $3.43, this figure varying considerably, according to the locality in which the records were taken.

Net cost of keeping a bull in the partially-milked group.—The average net cost of maintaining a bull for the 65 farms in the partially-milked group, as shown in Table 21, is $34.14, ranging from $31.59 in Kansas (not considering one farm in Nebraska) to $38.42 in Iowa. As the majority of these bulls were grades and were mostly purchased at a low cost, there was an average appreciation of $4.98 per head. There was an appreciation in all cases, except for the farms visited in Iowa in 1915, where there was a depreciation of only 19 cents. The average manure credit was $4.27.

Net cost of keeping a bull in the double-nursing group.—The average net cost of maintaining a bull in this group (see Table 22) was $40.53, the average cost for Iowa, where the bulk of the records were taken, being $47.36. The costs in the other States were invariably lower. The average depreciation charge was $1.40. In Iowa it was $3.14. The average manure credit was $4.60.

THE CALVES.

For convenience, the discussion of the production of calves is treated under three separate headings, as follows:

(1) The average cost of raising a calf until weaning time.
(2) The average cost of producing a yearling.
(3) The cost of producing baby beef.

AVERAGE COST OF RAISING A CALF UNTIL WEANING TIME.

The same classification used in discussing the breeding herds has been retained for the calves. In the beef, baby-beef, partially-milked, and double-nursing groups all the calves are weaned in the fall, just before they go on winter feed, or when 6 to 8 months old.

TABLE 23.—*The percentage of calves raised in the six groups, by States.*

State.	Beef.				Baby beef.				Dual purpose.				Mixed.				Partially milked.				Double nursing.			
	Number of farms.	Number of cows per farm.	Number of calves per farm.	Per cent calf crop.	Number of farms.	Number of cows per farm.	Number of calves per farm.	Per cent calf crop.	Number of farms.	Number of cows per farm.	Number of calves per farm.	Per cent calf crop.	Number of farms.	Number of cows per farm.	Number of calves per farm.	Per cent calf crop.	Number of farms.	Number of cows per farm.	Number of calves per farm.	Per cent calf crop.	Number of farms.	Number of cows per farm.	Number of calves per farm.	Per cent calf crop.
Indiana:																								
1914	6	16.5	15.3	96.2	.....	.....	.....	.....	1	8.0	8.0	100.0	.....	.....	.....	.....	15	9.6	9.3	97.9	1	12.0	12.0	100.0
Illinois:																								
1914	13	21.0	18.4	89.3	2	52.5	39.0	72.5	3	8.3	8.0	96.8	.....	.....	.....	.....	1	12.0	10.0	83.3	2	7.5	7.5	100.0
Minnesota:																								
1914	3	22.3	17.0	84.7	.....	.....	.....	.....	6	12.2	10.7	84.9	8	30.8	28.0	89.4	.....	.....	.....	.....	2	27.5	22.5	87.0
1915	9	21.4	18.9	85.0	.....	.....	.....	.....	22	16.0	13.6	82.5	9	20.1	15.3	84.6	.....	.....	.....	.....	1	25.0	20.0	80.0
Both years	12	21.7	18.4	85.0	.....	.....	.....	.....	28	15.2	13.0	83.0	17	25.1	21.3	86.8	.....	.....	.....	.....	3	26.7	21.7	84.5
Iowa:																								
1914	23	29.3	24.8	88.3	15	32.8	30.1	92.3	24	11.6	9.8	85.3	16	17.2	15.6	88.7	3	25.0	20.0	77.1	1	17.0	15.0	88.5
1915	53	31.8	27.6	85.8	30	31.0	28.3	90.4	15	12.1	11.1	84.4	24	16.0	13.8	90.9	4	19.0	16.2	86.6	11	16.6	15.4	92.5
Both years	76	31.1	26.7	86.5	45	31.6	29.1	91.1	39	11.8	10.3	85.0	40	16.4	14.5	90.0	7	21.6	17.9	82.2	12	16.7	15.3	92.2
Missouri:																								
1914	24	18.6	16.9	91.6	2	18.5	17.5	96.6	2	20.0	17.5	80.0	2	13.5	10.5	75.5	22	13.6	12.2	86.6	.....	.....	.....	.....
1915	9	31.3	26.9	86.7	2	23.0	22.0	96.2	1	10.0	10.0	100.0	2	25.0	19.5	69.4	11	16.0	14.7	92.0	.....	.....	.....	.....
Both years	33	22.1	19.6	90.2	4	20.8	19.8	96.3	3	16.7	15.0	85.7	4	19.2	15.0	72.4	33	14.4	13.0	88.3	.....	.....	.....	.....
South Dakota:																								
1914	6	30.2	25.2	86.4	.....	.....	.....	.....	4	11.0	8.8	75.6	5	48.8	41.2	86.4	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska:																								
1914	24	28.3	23.2	76.9	6	36.6	33.3	93.0	3	10.7	9.3	90.7	8	19.0	16.4	83.7	1	25.0	22.0	91.7	.....	.....	.....	.....
1915	14	24.7	20.8	82.6	3	38.0	35.0	91.2	2	6.5	5.0	76.9	3	23.0	22.7	99.3	1	7.0	7.0	100.0	1	9.0	9.0	100.0
Both years	38	27.0	22.3	78.9	9	37.1	33.8	92.4	5	9.0	7.6	84.6	11	20.1	17.7	87.4	2	16.0	14.5	95.7	.....	.....	.....	.....
Kansas:																								
1914	21	53.5	41.2	77.5	.....	.....	.....	.....	10	15.2	12.0	71.0	11	30.0	25.5	86.4	6	13.8	12.7	91.6	.....	.....	.....	.....
1915	25	47.8	40.4	85.2	6	56.0	49.7	89.5	17	11.4	10.0	91.2	14	31.3	27.1	87.6	1	32.0	28.0	87.7	3	21.7	19.0	90.1
Both years	46	50.4	40.8	81.5	.....	.....	.....	.....	27	12.8	10.8	82.5	25	30.7	26.4	87.1	7	16.4	14.9	91.1	.....	.....	.....	.....
Grand total or general average:																								
1914	120	29.52	24.28	84.6	25	34.16	30.56	90.8	53	12.32	10.34	82.2	50	25.48	22.20	86.7	48	13.30	11.98	89.9	6	16.50	14.50	93.3
1915	110	33.66	28.85	85.2	41	34.80	31.59	90.7	57	13.16	11.49	85.5	52	21.54	17.73	88.3	17	17.12	15.41	90.8	16	17.62	15.94	91.6
Both years	230	31.50	26.47	84.9	66	34.56	31.20	90.7	110	12.75	10.94	83.9	102	23.47	20.22	87.5	65	14.29	12.88	90.1	22	17.32	15.55	92.1

The calves in the dual-purpose group and part of those in the mixed group are weaned shortly after birth and are fed on whole and skim milk for an average feeding period of approximately 4½ months. The extra feed that these calves receive after being weaned from skim milk and before going on winter feed at 6 to 8 months of age is included with the skim-milk-feeding period, in order that their cost at the time of going on winter feed may be comparable with that of the calves in the other four groups.

The greatest item of expense in producing a bunch of calves is that for maintaining the breeding herd. The proportion of this charge that each calf must bear depends on the percentage of cows producing calves, and also on the number of calves produced per bull.

The calf crop.—The best calf crop (92.1 per cent) was found in the double-nursing group (see Table 23), where there were approximately 17 cows to the farm. The next best crop (90.7 per cent) was in the baby-beef group. The calf crop ranges from 72.5 per cent for two farms in Illinois to 96.3 per cent for four farms in Missouri. The majority of the baby-beef records were obtained in Iowa, where the average calf crop was 91.1 per cent. The per cent of calves produced in the partially-milked group is 90.1, and in the mixed group, 87.5. The per cent of calves produced is low in the beef and dual-purpose groups. In the former, where the herds averaged approximately 32 cows, the calf crop if 84.9 per cent, ranging from 78.9 in Nebraska to 96.2 in Indiana, where the herds are small. Although the herds of the dual-purpose group were small, averaging only 13 cows, the percentage of calves raised until 6 to 8 months of age is lowest, being only 83.9 per cent. This is probably due to the fact that a considerable number of calves were lost while being fed on skim milk. With the exception of groups where there were less than five farms, the highest average percentage of calves (97.9 per cent) is for the 15 farms in the Indiana partially-milked group, while the lowest (71 per cent) is shown in the Kansas dual-purpose group for 1914.

Number of calves per bull.—The average number of calves produced per bull is shown in Table 24. The highest average was 25.3 in the baby-beef group, the State averages ranging from 19.5 in Kansas, where there was an average of 2.3 bulls to the farm, to 26.6 in Iowa. In the beef group there were approximately 21 calves per bull, the State averages ranging from 14.3 calves in Illinois to 29.5 calves in Kansas. In the mixed group the average is 18.5, and in the partially milked and double-nursing groups, 12.6 and 15 calves, respectively. The smallest number of calves per bull, 10.7, is found in the dual-purpose group, the State averages varying from 6 calves in Illinois to 12.5 in Minnesota.

The cost of raising a calf in the beef group.—The average farm cost of raising a beef calf until weaning time is shown in Table 25. In

TABLE 24.—*The average number of calves produced per bull in the six groups, by States.*

State.	Beef.				Baby beef.				Dual purpose.				Mixed.				Partially milked.				Double nursing.			
	Number of farms.	Number of calves per farm.	Number of bulls per farm.	Calves per bull.	Number of farms.	Number of calves per farm.	Number of bulls per farm.	Calves per bull.	Number of farms.	Number of calves per farm.	Number of bulls per farm.	Calves per bull.	Number of farms.	Number of calves per farm.	Number of bulls per farm	Calves per bull.	Number of farms.	Number of calves per farm.	Number of bulls per farm.	Calves per bull.	Number of farms.	Number of calves per farm.	Number of bulls per farm.	Calves per bull.
Indiana:																								
1914	6	15.3	1.00	15.3	.....	.....	.....	.....	1	8.0	1.00	8.0	.....	.....	.....	.....	15	9.3	0.83	8.6	1	12.0	1.00	12.0
Illinois:																								
1914	13	18.4	.92	14.3	2	39.0	1.50	23.0	3	8.0	.67	6.0	.....	.....	.....	.....	1	10.0	1.00	10.0	2	7.5	.50	5.0
Minnesota:																								
1914	3	17.0	.67	12.0	.....	.....	.....	.....	6	10.7	.83	8.0	8	28.0	0.88	19.9	.....	.....	.....	.....	2	22.5	1.00	22.5
1915	9	18.9	1.00	18.9	.....	.....	.....	.....	22	13.6	1.00	13.6	9	15.3	.89	17.7	.....	.....	.....	.....	1	20.0	1.00	20.0
Both years	12	18.4	.92	17.2	.....	.....	.....	.....	28	13.0	.96	12.5	17	21.3	.89	18.8	.....	.....	.....	.....	3	21.7	1.00	21.7
Iowa:																								
1914	23	24.8	1.04	22.2	15	30.1	1.07	28.9	24	9.8	.95	10.7	16	15.6	1.00	15.6	3	20.0	1.00	20.0	1	15.0	1.00	15.0
1915	53	27.6	1.18	20.3	30	28.3	1.07	25.5	15	11.1	.93	9.9	24	13.8	.90	14.0	4	16.2	1.00	16.2	11	15.4	1.00	15.4
Both years	76	26.7	1.14	20.9	45	29.1	1.07	26.6	39	10.3	.94	10.4	40	14.5	.94	14.6	7	17.9	1.00	17.9	12	15.3	1.00	15.3
Missouri:																								
1914	24	16.9	.98	14.1	2	17.5	1.00	17.5	2	17.5	1.50	11.2	2	10.5	1.00	10.5	22	12.2	.95	12.2	.....	.....	.....	.....
1915	9	26.9	1.22	22.2	2	22.0	1.00	22.0	1	10.0	1.00	10.0	2	19.5	1.50	12.8	11	14.7	1.00	14.7	.....	.....	.....	.....
Both years	33	19.6	1.05	16.3	4	19.8	1.00	19.8	3	15.0	1.33	10.8	4	15.0	1.25	11.6	33	13.0	.97	13.0	.....	.....	.....	.....
South Dakota:																								
1914	6	25.2	1.00	25.2	.....	.....	.....	.....	4	8.8	1.00	8.8	5	41.2	1.40	17.2	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska:																								
1914	24	23.2	1.17	19.8	6	33.3	1.33	23.6	3	9.3	1.00	9.3	8	16.4	.87	15.4	1	22.0	1.00	22.0	.....	.....	.....	.....
1915	14	20.8	1.14	15.7	3	35.0	1.33	28.2	2	5.0	1.00	5.0	3	22.7	1.00	22.7	1	7.0	.....	.....	1	9.0	1.00	9.0
Both years	38	22.3	1.16	18.3	9	33.8	1.33	25.1	5	7.6	1.00	7.6	11	17.7	.91	17.4	2	14.5	.50	11.0	.....	.....	.....	.....
Kansas:																								
1914	21	41.2	1.31	32.4	.....	.....	.....	.....	10	12.0	.85	12.1	11	25.5	1.05	24.8	6	12.7	1.00	12.7	.....	.....	.....	.....
1915	25	40.4	1.12	27.0	6	49.7	2.30	19.5	17	10.0	.88	9.7	14	27.1	1.07	27.7	1	28.0	1.00	28.0	3	19.0	.67	17.3
Both years	46	40.8	1.21	29.5	.....	.....	.....	.....	27	10.8	.87	10.6	25	26.4	1.06	26.4	7	14.9	1.00	14.9	.....	.....	.....	.....
Grand total or general average:																								
1914	120	24.28	1.07	20.6	25	30.56	1.16	26.2	53	10.34	.93	10.1	50	22.20	1.01	18.2	48	11.98	.92	11.8	6	14.50	.83	13.5
1915	110	28.85	1.15	21.3	41	31.59	1.27	24.7	57	11.49	.95	11.1	52	17.73	.97	18.8	17	15.41	.94	15.0	16	15.94	.94	15.6
Both years	230	26.47	1.11	20.9	66	31.20	1.23	25.3	110	10.94	.94	10.7	102	20.22	.99	18.5	65	12.88	.92	12.6	22	15.55	.91	15.0

this group there are two principal items of expense, the cow charge and the bull charge. With the exception of a charge of 1 cent per calf for extra feed, these two figures make the total cost of keeping a beef calf up to weaning time, as all other expenses are debited against the cows until the calves are weaned. Where a calf was vaccinated for blackleg previous to weaning, this charge was carried over and figured in with the cost of producing yearlings. The small charge for feed in this group is due to one farmer in Missouri feeding his calves 2½ pounds of extra grain per head per day for a period of two months previous to weaning them in the fall. This made an additional feed bill of $1.61 for each of the 30 calves on this farm which, averaged against all of the 1915 Missouri calves, made a feed charge of 18 cents, or 1 cent for each of the calves in the group.

The cow charge per calf is determined by multiplying the net cost of keeping a cow on each individual farm for one year by the number of cows per calf on that farm. The averages of these figures for the 230 farms in the beef group are shown in the fifth column of Table 25. The average cow charge is $35.47, and ranges from $26.21 in South Dakota to $38.73 in Kansas.

The bull charge per calf is obtained by dividing the net cost of keeping a bull for one year on each of these farms by the number of calves per bull on that farm. The average bull charge so obtained is $2.26, ranging from $1.80 in South Dakota, where there were 29.5 calves per bull, to $3.75 in Indiana, where there were only 15.3 calves per bull. The average cost of a beef calf at weaning time (6 to 8 months) is $37.74, varying from $28.01 in South Dakota to $40.54 in Kansas.

Cost of raising a calf in the baby-beef group.—The average cost of raising a baby-beef calf until weaning time, as shown in Table 26, is $36.79, or practically $1 less than for a calf in the beef group. The cow charges per calf average $34.50, ranging from $31.95 in Nebraska to $38.16 in Kansas. This is 97 cents less than the cow charge for the calves in the beef group, although the net cost of maintenance for the cows in the baby-beef group is greater than that for the cows in the beef group. This difference is because of the larger percentage of calves raised in the baby-beef group, this better yield probably being due to the fact that the cows were better fed and better cared for.

The average bull charge is $2.29 per calf, which is practically the same as for the beef group, although there is a difference of $10 in the net cost of the bulls in the two groups. The bulls in the baby-beef group, while costing considerably more for their keep, were in larger herds and obtained on an average 4½ more calves per year than the bulls in the beef group, this larger yield offsetting the greater cost. The cow charge and bull charge constitute the total cost of carrying a baby-beef calf until weaning time.

TABLE 25.—*The various charges that constitute the average farm cost of raising a calf up to weaning time (6 to 8 months) in the beef group.*

State.	Number of farms.	Number of calves.	Net cost per cow.	Cows per calf.	Cow charge per calf.	Net cost per bull.	Calves per bull.	Bull charge per calf.	Feed.	Labor.	Total.
Indiana:											
1914	6	92	$34.41	1.040	$35.60	$42.93	15.3	$3.75	$0.00	$0.00	$39.35
Illinois:											
1914	13	221	33.98	1.120	37.80	31.62	14.3	2.25	.00	.00	40.05
Minnesota:											
1914	3	51	28.95	1.180	33.85	24.10	12.0	1.64	.00	.00	35.49
1915	9	170	30.56	1.176	34.80	41.53	18.9	2.28	.00	.00	37.08
Both years	12	221	30.16	1.177	34.57	37.17	17.2	2.12	.00	.00	36.69
Iowa:											
1914	23	571	31.19	1.132	34.64	53.44	22.2	2.37	.00	.00	37.01
1915	53	1,477	31.61	1.166	36.61	49.08	20.3	2.46	.00	.00	39.07
Both years	76	2,048	31.49	1.156	36.01	50.40	20.9	2.43	.00	.00	38.44
Missouri:											
1914	24	406	30.24	1.092	32.98	34.38	14.1	2.68	.00	.00	35.66
1915	9	242	26.36	1.153	30.42	32.02	22.2	1.47	.18	.00	32.07
Both years	33	648	29.18	1.108	32.28	33.73	16.3	2.35	.05	.00	34.68
South Dakota:											
1914	6	154	22.96	1.158	26.21	38.70	25.2	1.80	.00	.00	28.01
Nebraska:											
1914	24	556	27.71	1.300	36.48	41.85	19.8	2.58	.00	.00	39.06
1915	14	297	25.13	1.210	30.21	25.28	15.7	1.80	.00	.00	32.01
Both years	38	853	26.76	1.267	34.17	35.75	18.3	2.29	.00	.00	36.46
Kansas:											
1914	21	867	33.52	1.290	42.99	42.33	32.4	1.51	.00	.00	44.50
1915	25	1,009	30.06	1.174	35.16	47.33	27.0	2.05	.00	.00	37.21
Both years	46	1,876	31.64	1.227	38.73	45.05	29.5	1.81	.00	.00	40.54
Grand total or general average:											
1914	120	2,918	30.71	1.182	36.09	41.01	20.6	2.33	.00	.00	38.42
1915	110	3,195	29.92	1.174	34.81	43.64	21.3	2.19	.01	.00	37.01
Both years	230	6,113	30.33	1.178	35.47	42.27	20.9	2.26	.01	.00	37.74

TABLE 26.—*The various charges that constitute the average farm cost of raising a calf up to weaning time (6 to 8 months) in the baby-beef group.*

State.	Number of farms.	Number of calves.	Net cost per cow.	Cows per calf.	Cow charge per calf.	Net cost per bull.	Calves per bull.	Bull charge per calf.	Feed.	Labor.	Total.
Illinois:											
1914	2	78	$25.01	1.380	$34.65	$56.12	23.0	$2.42	$0.00	$0.00	$37.07
Iowa:											
1914	15	458	32.79	1.083	35.28	58.66	28.9	2.24	.00	.00	37.52
1915	30	855	30.97	1.106	34.17	54.23	25.5	2.24	.00	.00	36.41
Both years	45	1,313	31.58	1.098	34.53	55.71	26.6	2.24	.00	.00	36.77
Missouri:											
1914	2	35	35.41	1.035	36.51	33.26	17.5	2.78	.00	.00	39.29
1915	2	44	30.98	1.040	31.98	54.08	22.0	2.43	.00	.00	34.41
Both years	4	79	33.19	1.038	34.25	43.67	19.8	2.60	.00	.00	36.85
Nebraska:											
1914	6	199	33.32	1.075	35.46	58.09	23.6	2.55	.00	.00	38.01
1915	3	105	22.88	1.097	24.95	44.25	28.2	2.13	.00	.00	27.08
Both years	9	304	29.85	1.082	31.95	53.48	25.1	2.41	.00	.00	34.36
Kansas:											
1915	6	298	33.13	1.117	38.16	40.04	19.5	2.19	.00	.00	40.35
Grand total or general average:											
1914	25	770	32.51	1.101	35.37	56.29	26.2	2.37	.00	.00	37.74
1915	41	1,302	30.69	1.103	33.97	51.42	24.7	2.24	.00	.00	36.21
Both years	66	2,072	31.38	1.102	34.50	53.26	25.3	2.29	.00	.00	36.79

Cost of raising a calf in the dual-purpose group.—The average cow charge per calf in the dual-purpose group (see Table 27) is $7.34, this charge being $15.57 for 1914, whereas for 1915 there is a small credit of 29 cents to each calf. The bull charge averages $4.02, this cost (not considering one farm in Indiana) ranging from $2.77 in Illinois to $6.09 in Nebraska.

The calves in this group were weaned shortly after birth and were raised on whole milk, skim milk, pasturage, and some extra grain. They also frequently received additional roughage, especially toward the latter part of the season, just before going on winter feed. The average feed charge for these calves is $9.35, this item varying from $5.38 in South Dakota to $11.10 in Nebraska. The labor charge in caring for these skim-milk calves averages $2.56. The average cost of raising a dual-purpose calf until weaned of skim milk and put on winter feed is $23.27, this charge being $30.97 for 1914, as against $16.13 for 1915.

Cost of raising a calf in the mixed group.—The average cow charge per calf in the mixed group is $22.29 (see Table 28), ranging from $18.63 in South Dakota to $35.89 in Missouri. The bull charge averages $2.91, this item varying from $1.84 in Kansas to $3.94 in Missouri. The feed cost averages $4.48 per calf, varying from $2.04 in South Dakota to $6.68 in Missouri. In obtaining this figure, the total cost of feed consumed by the hand-raised calves was determined, and this amount was prorated against all of the calves in the group. The labor item, which is for the skim-milk calves only, has also been prorated against all of the calves. This amounts to $1.11 per head, the averages for the different States being very nearly the same.

The average total cost of producing a calf in this group is $30.79, this figure varying from $23.63 in South Dakota to $47.74 in Missouri.

Cost of raising a calf in the partially-milked group.—The average cost of raising a calf on each of the 65 farms in the partially-milked group (as shown in Table 29) is $27.08, ranging from $17.76 in Nebraska (not considering one farm in Illinois) to $30.54 in Indiana in 1914. The cow charge is $23.71, while the bull charge averages $3.35. Ordinarily there is no feed or labor charge to be made against calves in this group. However, on one farm in Iowa the calves were kept up and allowed to nurse their dams twice daily, and in addition received extra grain for a period of 5½ months. This charge, when averaged among all the calves, amounts to 2 cents a head.

TABLE 27.—*The various charges that constitute the average farm cost of raising a calf up to weaning time (6 to 8 months) in the dual-purpose group.*

State.	Number of farms.	Number of calves.	Net cost per cow.[1]	Cows per calf.	Cow charge per calf.[1]	Net cost per bull.	Calves per bull.	Bull charge per calf.	Feed.	Labor.	Total.
Indiana:											
1914	1	8	$13.68	1.000	$13.68	$16.96	8.0	$2.12	$8.64	$3.38	$27.82
Illinois:											
1914	3	24	24.22	1.033	24.90	20.80	6.0	2.77	7.78	2.59	38.04
Minnesota:											
1914	6	66	12.99	1.178	17.87	43.36	8.0	4.95	8.83	2.80	34.45
1915	22	299	3.61	1.212	2.76	32.86	13.7	2.57	10.36	1.80	17.49
Both years	28	365	5.62	1.205	6.00	35.11	12.5	3.08	10.03	2.01	21.12
Iowa:											
1914	24	219	10.80	1.172	13.36	46.54	10.7	5.24	7.85	3.01	29.46
1915	15	173	− 2.85	1.185	− 3.10	43.85	9.9	4.63	12.49	2.10	16.12
Both years	39	392	5.55	1.177	7.03	45.51	10.4	5.00	9.64	2.66	24.33
Missouri:											
1914	2	35	21.73	1.250	28.15	55.45	11.2	5.40	7.69	1.89	43.13
1915	1	10	− 7.47	1.000	− 7.47	9.05	10.0	.90	13.03	1.35	7.81
Both years	3	45	11.99	1.167	16.27	39.98	10.8	3.90	9.47	1.71	31.35
South Dakota:											
1914	4	35	2.46	1.322	4.55	40.30	9.8	5.42	5.38	3.64	18.99
Nebraska:											
1914	3	28	6.36	1.103	7.52	40.43	9.3	4.84	10.75	2.49	25.60
1915	2	10	−17.14	1.300	−22.10	39.86	5.0	7.97	11.62	3.07	.56
Both years	5	38	− 3.04	1.182	− 4.33	40.20	7.6	6.09	11.10	2.72	15.58
Kansas:											
1914	10	120	14.14	1.407	21.12	29.38	12.1	2.56	8.15	2.78	34.61
1915	17	158	2.08	1.097	1.23	30.14	9.7	3.59	9.00	2.87	16.69
Both years	27	278	6.54	1.212	8.60	29.87	10.6	3.21	8.60	2.84	23.25
Grand total or general average:											
1914	53	535	12.02	1.216	15.57	40.45	10.1	4.50	8.00	2.90	30.97
1915	57	650	.53	1.170	− .29	34.77	11.1	3.58	10.60	2.24	16.13
Both years	110	1,185	6.07	1.192	7.34	37.51	10.7	4.02	9.35	2.56	23.27

[1] Minus quantities indicate excess of credits above costs.

TABLE 28.—*The various charges that constitute the average farm cost of raising a calf up to weaning time (6 to 8 months) in the mixed group.*

State.	Number of farms.	Number of calves.	Net cost per cow.	Cows per calf.	Cow charge per calf.	Net cost per bull.	Calves per bull.	Bull charge per calf.	Feed.	Labor.	Total.
Minnesota:											
1914	8	224	$21.82	1.119	$25.05	$51.41	19.9	$2.42	$2.08	$0.68	$30.23
1915	9	138	13.29	1.182	17.22	47.91	17.7	3.17	5.56	1.20	27.15
Both years	17	362	17.31	1.152	20.90	49.56	18.8	2.81	3.92	.96	28.59
Iowa:											
1914	16	248	24.05	1.127	26.46	63.69	15.6	4.89	4.31	1.43	37.09
1915	24	341	14.80	1.100	16.15	41.68	14.0	3.00	6.70	1.26	27.11
Both years	40	589	18.50	1.111	20.28	50.48	14.6	3.75	5.74	1.33	31.10
Missouri:											
1914	2	21	22.09	1.325	31.12	34.18	10.5	3.64	5.24	1.42	41.42
1915	2	39	28.17	1.440	40.66	53.18	12.8	4.23	8.14	1.03	54.06
Both years	4	60	25.13	1.382	35.89	43.68	11.6	3.94	6.68	1.23	47.74
South Dakota:											
1914	5	206	15.92	1.158	18.63	39.50	17.2	2.08	2.04	.88	23.63
Nebraska:											
1914	8	131	25.76	1.195	31.52	41.84	15.4	2.63	2.60	1.65	38.40
1915	3	64	12.33	1.007	12.16	32.23	22.7	1.65	4.24	.55	18.60
Both years	11	195	22.10	1.144	26.24	39.21	17.4	2.36	3.05	1.35	33.00
Kansas:											
1914	11	283	22.50	1.157	26.51	41.64	24.8	1.89	3.41	.87	32.68
1915	14	379	18.31	1.142	20.74	46.42	27.7	1.81	3.77	.70	27.02
Both years	25	662	20.15	1.148	23.28	44.32	26.4	1.84	3.61	.78	29.51
Grand total or general average:											
1914	50	1,113	22.73	1.154	26.46	49.78	18.2	3.14	3.29	1.17	34.06
1915	52	961	15.85	1.133	18.28	43.93	18.8	2.68	5.63	1.05	27.64
Both years	102	2,074	19.23	1.143	22.29	46.79	18.5	2.91	4.48	1.11	30.79

TABLE 29.—*The various charges that constitute the average farm cost of raising a calf up to weaning time (6 to 8 months) in the partially-milked group.*

State.	Number of farms.	Number of calves.	Net cost per cow.	Cows per calf.	Cow charge per calf.	Net cost per bull.	Calves per bull.	Bull charge per calf.	Feed.	Labor.	Total.
Indiana:											
1914	15	139	$25.32	1.021	$25.97	$33.98	8.6	$4.57	$0.00	$0.00	$30.54
Illinois:											
1914	1	10	7.95	1.200	9.54	35.10	10.0	3.51	.00	.00	13.05
Iowa:											
1914	3	60	15.81	1.297	20.65	35.45	20.0	2.69	.00	.00	23.34
1915	4	65	19.23	1.155	22.22	40.65	16.2	2.64	.31	.00	25.17
Both years	7	125	17.76	1.216	21.55	38.42	17.9	2.66	.17	.00	24.38
Missouri:											
1914	22	276	23.22	1.155	27.00	35.20	12.2	3.46	.00	.00	30.46
1915	11	162	19.71	1.087	21.77	33.42	14.7	2.77	.00	.00	24.54
Both years	33	438	22.05	1.132	25.26	34.61	13.0	3.23	.00	.00	28.49
Nebraska:											
1914	1	22	27.97	1.090	30.49	42.27	22.0	1.92	.00	.00	32.41
1915	1	10	2.80	1.000	2.80	.00	.0	.30	.00	.00	3.10
Both years	2	32	15.39	1.045	16.65	21.14	11.0	1.11	.00	.00	17.76
Kansas:											
1914	6	76	14.83	1.092	15.81	31.21	12.7	2.91	.00	.00	18.72
1915	1	28	25.75	1.140	29.36	33.91	28.0	1.21	.00	.00	30.57
Both years	7	104	16.39	1.098	17.74	31.59	14.9	2.63	.00	.00	20.37
Grand total or general average:											
1914	48	583	22.14	1.113	24.59	34.48	11.8	3.66	.00	.00	28.25
1915	17	265	18.95	1.101	21.21	33.19	15.0	2.48	.07	.00	23.76
Both years	65	848	21.32	1.110	23.71	34.14	12.6	3.35	.02	.00	27.08

TABLE 30.—*The various charges that constitute the average farm cost of raising a calf up to weaning time (6 to 8 months) in the double-nursing group.*

State.	Number of farms.	Number of calves.	Net cost per cow.	Cows per calf.	Cow charge per calf.	Net cost per bull.	Calves per bull.	Bull charge per calf.	Feed.	Labor.	Total.
Indiana:											
1914	1	12	$28.88	1.000	$28.88	$41.65	12.0	$3.47	$0.00	$0.00	$32.35
Illinois:											
1914	2	15	28.21	1.000	28.21	19.14	5.0	1.92	.00	.00	30.13
Minnesota:											
1914	2	45	21.34	1.150	25.08	43.76	22.5	1.88	.00	.00	26.96
1915	1	20	15.71	1.250	19.64	40.56	20.0	2.03	.00	.00	21.67
Both years	3	65	19.46	1.183	23.27	42.70	21.7	1.93	.00	.00	25.20
Iowa:											
1914	1	15	22.34	1.130	25.24	43.82	15.0	2.92	.00	.00	28.16
1915	11	165	11.90	1.081	13.58	47.68	15.4	3.71	.16	.02	17.47
Both years	12	180	12.77	1.085	14.56	47.36	15.3	3.64	.14	.02	18.36
Nebraska:											
1915	1	9	11.31	1.000	11.31	48.04	9.0	5.34	.00	.00	16.65
Kansas:											
1915	3	47	[1] −5.61	1.110	[1] −7.16	22.45	17.3	1.45	1.31	.00	[1] −4.40
Grand total or general average:											
1914	6	87	25.05	1.072	26.78	35.22	13.5	2.33	.00	.00	29.11
1915	16	241	8.82	1.092	9.93	42.52	15.6	2.28	.35	.02	13.58
Both years	22	328	13.24	1.086	14.53	40.53	15.0	3.02	.26	.01	17.82

[1] Minus quantities indicate excess of credits above costs.

Cost of raising a calf in the double-nursing group.—Table 30 shows that the average cost of a calf at weaning time in the double-nursing group is $17.82, the cost in 1914 being $29.11, and in 1915, $13.58. It should be noted that in this group but few records (six) were obtained in the unfavorable year of 1914, while 16 were taken in the more favorable year of 1915. The cow charge per calf averages

$14.53, and the bull charge, $3.02. In this group, two farms were found where the calves received extra grain, additional labor also being included on one of these farms. The extra feed, when averaged against all of the calves, amounts to 26 cents, while the extra labor is 1 cent. The cows on three farms in Kansas in 1915 gave their calves an average credit of $7.16 each, after all their expenses were deducted. As this credit was greater than the combined charges for the bull and additional feed for the calf, the calves still had a credit of $4.40 each at weaning time. In other words, on these three farms the calves were produced at no cost whatever to the farmer, while there was a credit of $4.40 still remaining because of the extra milk produced by the cows.

A COMPARISON OF GROUPS.

In Table 31 the cost of raising a calf to from 6 to 8 months of age, or to weaning time, is shown by groups. The beef and the baby-beef calves are the most expensive, costing $37.74 and $36.79, respectively. The calves in the double-nursing group are the cheapest, costing but $17.82. The costs for the remainder are as follows: Mixed, $30.79; partially milked, $27.08; dual purpose, $23.27.

The cow charge is the heaviest item of expense, amounting to $35.47 per calf in the beef group and $34.50 in the baby-beef group, and forming approximately 94 per cent of the total cost. In the mixed and partially-milked groups the cow charge is $22.29 and $23.71, respectively, these charges forming from 72.4 to 87.6 per cent, respectively, of the total cost. This charge drops to $14.53 in the double-nursing group and to $7.34 in the dual-purpose group. In the dual-purpose group the cow charge makes approximately one-third of the total cost.

The bull charge makes from 6 per cent of the total cost, in the beef and baby-beef groups, to approximately 17 per cent in the dual-purpose and double-nursing groups. In the beef group, where there is an average of 22.4 calves to share the expense, this charge is lowest, amounting to $2.26. In the baby-beef group, where there are 25.3 calves per bull, the charge is a little larger than that for the preceding group, being $2.29. In this particular group the higher charge is due to the better quality of the breeding animals, which also received better care. In the dual-purpose group, where there are only 10.7 calves per bull, this charge is $4.02. In the remaining groups, where the number of calves per bull is rather low, the costs are considerably higher than in the beef and baby-beef groups, ranging from $2.91 in the mixed to $3.35 in the partially-milked groups.

In the beef group, on 46 farms in Kansas where an average of 30 calves were produced by each bull, the bull charge amounts to $1.81.

On 39 dual-purpose farms in Iowa, where there were only 10 calves per bull, this charge averages $5.00, in spite of the fact that cheaper bulls were used. On these same farms the feed cost for calves raised on skim milk amounts to $9.64, while the labor charge is $2.66. In the mixed group, where only 37 per cent of the cows were milked and their calves raised on skim milk, the charges are approximately half as large. In the beef, partially-milked, and double-nursing groups there is a slight charge for extra feed given the calves before weaning time.

The figures indicate that the bull charge is an important item of expense in small herds. The records show that farmers realize this, for many make a practice of buying calves or yearling bulls, which are kept one or two years and then sold, at an advance, to breeders having larger herds. A number of instances were found where two farmers used the same bull, thus virtually cutting the bull charge in half. By following either of these practices it is possible either to decrease the bull charge or to have the use of a bull of high quality at approximately the same cost as is found on those farms where poor bulls are kept.

TABLE 31.—*A comparison of the different items of cost in raising a calf to weaning time (6 to 8 months) in the six groups.*

Group.	Number of farms.	Average number calves per farm.	Cost per calf.				
			Cow charge.	Bull charge.	Feed.	Labor.	Total.
Beef:							
1914	120	24.28	$36.09	$2.33	$0.00	$0.00	$38.42
1915	110	28.85	34.81	2.19	.01	.00	37.01
Both years	230	26.47	35.47	2.26	.01	.00	37.74
Baby beef:							
1914	25	30.56	35.37	2.37	.00	.00	37.74
1915	41	31.59	33.97	2.24	.00	.00	36.21
Both years	66	31.20	34.50	2.29	.00	.00	36.79
Dual purpose:							
1914	53	10.34	15.57	4.50	8.00	2.90	30.97
1915	57	11.49	[1] —.29	3.58	10.60	2.24	16.13
Both years	110	10.94	7.34	4.02	9.35	2.56	23.27
Mixed:							
1914	50	22.20	26.46	3.14	3.29	1.17	34.06
1915	52	17.73	18.28	2.68	5.63	1.05	27.64
Both years	102	20.22	22.29	2.91	4.48	1.11	30.79
Partially milked:							
1914	48	11.98	24.59	3.66	.00	.00	28.25
1915	17	15.41	21.21	2.48	.07	.00	23.76
Both years	65	12.88	23.71	3.35	.02	.00	27.08
Double nursing:							
1914	6	14.50	26.78	2.33	.00	.00	29.11
1915	16	15.94	9.93	3.28	.35	.02	13.58
Both years	22	15.55	14.53	3.02	.26	.01	17.82

[1] Minus quantity indicates excess of credits above costs.

COST OF PRODUCING A YEARLING.

In this study the calves are taken at weaning time, which is usually in November or early December, and are carried until the opening of the pasture season the following spring, which is approximately May 1, at which time they average about 13 months old. While the groups, excepting the omission of the baby-beef group, are unchanged, there is a considerable change in the number of animals involved in the discussion. Many of the calves were sold at weaning time, to be fed out as baby beef or to be carried through and fed out as 2-year-olds. Thus data on the cost of producing yearlings were procured from but 531 farms, the calves from 65 of the 596 farms having been sold at weaning time. As a result of this change in the number of farms, the figures representing the cost of a calf at weaning time in the tables that follow are, of necessity, slightly different from those previously given.

Tables 32 to 36, inclusive, show the various items of expense that go to make up the gross cost of producing a yearling in each of the groups, baby beef being excepted. They also show the net cost after the manure credit has been deducted. The various items of expense are: "Cost at weaning time," "Cost of winter feed," "Labor," "Equipment," "Interest," "Risk," and "Other charges." Under the heading "Other charges," the items of taxes, insurance, and veterinary expense, being very small, are combined.

The winter feeding period is approximately six months. At the beginning of this period the calves in the beef group average from 425 to 450 pounds in weight, while those in the dual-purpose group average from 300 to 350 pounds. The average gain in weight during the period is approximately 50 pounds. The feed costs have been worked up in the same general manner as for the breeding herd. The item of labor, which is the cost of caring for the calves while on winter feed, is figured in the same manner as for the cows. The equipment charges were figured on the animal unit basis, as previously explained under the "Breeding herd," each calf being considered as one-third of an animal unit. The interest charge is based on the average of the first and second inventory values of the animal. The cost of the calf at weaning time is used as the first inventory value. The second inventory value is obtained by adding to the cost of the calf at weaning time the cost of feed and labor. Equipment and minor charges were not included, as interest has already been figured on these items. The item of risk was determined in the same manner as for the cows and bulls (being figured for the winter feeding period). This charge amounted to 32 cents a head, there being a loss of approximately 1 per cent. A considerable number of the calves lost died of blackleg. As previously stated, the items of insurance, taxes, and veterinary charges were very small. The veterinary charges were largely for vaccination against blackleg, these charges usually running

from 12½ to 25 cents per calf. The manure credit allowed was one-third that for cows and bulls, figured on the basis of the 1914 records, which indicates that a cow or bull consumes approximately three times as much feed as a calf.

TABLE 32.—*The cost of producing a yearling, based on the averages of 190 farms in the beef group.*

State.	Number of farms.	Number of calves.	Average cost per yearling.									
			Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.	Manure credit.	Net cost.
Indiana:												
1914	3	32	$39.98	$10.65	$2.01	$0.89	$1.38	$0.32	$0.00	$55.23	$1.36	$53.87
Illinois:												
1914	11	155	41.17	12.73	2.21	.97	1.46	.32	.00	58.86	1.97	56.89
Minnesota:												
1914	2	27	37.98	10.95	3.62	.41	1.36	.32	.00	54.64	1.25	53.39
1915	9	195	37.08	9.95	2.10	.93	1.29	.32	.02	51.69	1.25	50.44
Both years	11	222	37.24	10.13	2.38	.83	1.31	.32	.02	52.23	1.25	50.98
Iowa:												
1914	20	399	38.10	14.98	1.97	.92	1.37	.32	.01	57.67	1.97	55.70
1915	46	1,087	39.02	14.28	2.11	.90	1.42	.32	.04	58.09	1.97	56.12
Both years	66	1,486	38.75	14.49	2.06	.91	1.41	.32	.03	57.97	1.97	56.00
Missouri:												
1914	19	241	36.88	11.20	2.97	.50	1.32	.32	.00	53.19	1.36	51.83
1915	7	183	32.98	8.50	2.66	.79	1.16	.32	.08	46.49	1.36	45.13
Both years	26	424	35.84	10.47	2.89	.58	1.27	.32	.02	51.39	1.36	50.03
South Dakota:												
1914	5	138	29.95	8.04	1.61	.19	1.04	.32	.00	41.15	1.25	39.90
Nebraska:												
1914	19	478	40.31	14.08	1.69	.54	1.45	.32	.15	58.54	1.65	56.89
1915	12	319	31.82	11.71	1.54	.52	1.15	.32	.18	47.24	1.65	45.59
Both years	31	797	37.02	13.16	1.64	.53	1.33	.32	.16	54.16	1.65	52.51
Kansas:												
1914	12	450	46.58	11.68	2.28	.23	1.61	.32	.02	62.72	1.14	61.58
1915	25	937	37.21	9.59	2.50	.45	1.30	.32	.21	51.58	1.14	50.44
Both years	37	1,387	40.25	10.26	2.43	.38	1.40	.32	.16	55.20	1.14	54.06
Grand total or general average:												
1914	91	1,920	39.41	12.68	2.21	.62	1.40	.32	.03	56.67	1.59	55.08
1915	99	2,721	37.09	11.98	2.18	.73	1.33	.32	.10	53.73	1.61	52.12
Both years	190	4,641	38.20	12.32	2.19	.68	1.36	.32	.07	55.14	1.60	53.54

Cost of producing a yearling in the beef group.—The average gross cost of producing a yearling in the beef group (shown in Table 32), as obtained from 190 farms, was $55.14, this cost ranging from $41.15 in South Dakota to $57.97 in Iowa and $58.86 in Illinois.[1]

The average feed cost was $12.32, varying from $8.04 in South Dakota to $14.49 in Iowa. The labor item averaged $2.19. The equipment charge ranged from 19 cents in South Dakota to 91 cents in Iowa and 97 cents in Illinois, with an average of 68 cents. The interest charge averaged $1.36, varying from $1.04 in South Dakota to $1.46 in Illinois. The average manure credit was $1.60, making the average net cost of the yearlings in this group $53.54. The average weight of the yearlings ranged from 475 to 500 pounds.

Cost of producing a yearling in the dual-purpose group.—The average gross cost of producing a yearling in the dual-purpose group (as

[1] As the calves from 40 farms have been dropped from the records at this point, the average cost at weaning time of those left becomes 46 cents greater than the figure shown in Table 25. There are small fluctuations in this cost in each State, with changes in the number of farms. Some of these costs are greater than those shown in Table 25, while others are less. It might be noted that while the calves were sold from 29 farms visited in 1914, they were only sold from 11 of the 1915 farms.

TABLE 33.—*The cost of producing a yearling, based on the averages of 99 farms in the dual-purpose group.*

State.	Number of farms.	Number of calves.	Average cost per yearling.									
			Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.	Manure credit.	Net cost.
Indiana:												
1914	1	8	$27.82	$12.32	$3.38	$0.94	$1.07	$0.32	$0.25	$46.10	$1.69	$44.41
Illinois:												
1914	2	16	30.43	8.48	2.47	.84	1.08	.32	.00	43.62	2.46	41.16
Minnesota:												
1914	6	66	34.45	6.17	2.07	1.88	1.16	.32	.00	46.05	1.56	44.49
1915	22	291	17.49	8.20	2.33	1.05	.70	.32	.01	30.10	1.56	28.54
Both years	28	357	21.12	7.76	2.28	1.22	.80	.32	.01	33.51	1.56	31.95
Iowa:												
1914	22	215	28.42	12.36	2.83	1.28	1.08	.32	.01	46.30	2.46	43.84
1915	13	137	22.30	11.89	1.92	1.37	.87	.32	.01	38.68	2.46	36.22
Both years	35	352	26.15	12.18	2.49	1.31	1.01	.32	.01	43.47	2.46	41.01
Missouri:												
1914	1	25	28.14	11.16	2.16	.95	1.04	.32	.00	43.77	1.69	42.08
1915	1	10	22.50	10.33	1.62	1.59	.85	.32	.01	37.22	1.69	35.53
Both years	2	35	25.32	10.74	1.89	1.27	.95	.32	.....	40.49	1.69	38.80
South Dakota:												
1914	4	32	18.99	7.59	2.14	.62	.72	.32	.05	30.43	1.56	28.87
Nebraska:												
1914	3	28	25.60	5.81	2.49	1.34	.88	.32	.00	36.44	2.05	34.39
1915	2	10	.56	15.25	3.48	.68	.30	.32	.16	20.75	2.05	18.70
Both years	5	38	15.58	9.59	2.89	1.08	.64	.32	.06	30.16	2.05	28.11
Kansas:												
1914	8	94	35.08	8.22	2.33	.96	1.21	.32	.03	48.15	1.42	46.73
1915	14	126	18.56	10.33	3.09	.99	.76	.32	.15	34.20	1.42	32.78
Both years	22	220	24.56	9.56	2.82	.98	.92	.32	.11	39.27	1.42	37.85
Grand total or general average:												
1914	47	484	29.41	9.85	2.55	1.21	1.07	.32	.02	44.43	2.03	42.40
1915	52	574	18.43	10.00	2.47	1.11	.75	.32	.05	33.13	1.77	31.36
Both years	99	1,058	23.64	9.93	2.50	1.16	.90	.32	.04	38.49	1.89	36.60

TABLE 34.—*The cost of producing a yearling, based on the averages of 96 farms in the mixed group.*

State.	Number of farms.	Number of calves.	Average cost per yearling.									
			Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.	Manure credit.	Net cost.
Minnesota:												
1914	8	151	$30.23	$10.81	$3.08	$0.91	$1.11	$0.32	$0.00	$46.46	$1.19	$45.27
1915	9	189	27.15	10.32	1.98	.75	.98	.32	0.01	41.51	1.19	40.32
Both years	17	340	28.59	10.55	2.49	.83	1.04	.32	.01	43.83	1.19	42.64
Iowa:												
1914	15	224	36.03	14.72	2.81	1.21	1.34	.32	.00	56.43	1.87	54.56
1915	24	382	27.11	12.67	2.34	1.04	1.03	.32	.02	44.53	1.87	42.66
Both years	39	606	30.55	13.45	2.52	1.10	1.15	.32	.01	49.10	1.87	47.23
Missouri:												
1915	2	34	54.06	7.58	3.60	.81	1.79	.32	.03	68.19	1.29	66.90
South Dakota:												
1914	5	206	23.63	10.58	1.33	.43	.89	.32	.00	37.18	1.19	35.99
Nebraska:												
1914	7	106	41.12	12.41	2.65	.45	1.45	.32	.00	58.40	1.57	56.83
1915	3	57	18.60	10.35	2.16	.59	.74	.32	.16	32.92	1.57	31.35
Both years	10	163	34.36	11.79	2.50	.50	1.24	.32	.05	50.76	1.57	49.19
Kansas:												
1914	10	227	32.87	10.38	2.03	.68	1.17	.32	.00	47.45	1.09	46.36
1915	13	318	27.92	12.21	2.50	.46	1.03	.32	.18	44.62	1.09	43.53
Both years	23	545	30.07	11.41	2.29	.56	1.09	.32	.11	45.85	1.09	44.76
Grand total or general average:												
1914	45	914	33.71	12.24	2.50	.83	1.23	.32	.00	50.83	1.45	49.38
1915	51	980	27.88	11.80	2.35	.81	1.03	.32	.07	44.26	1.51	42.75
Both years	96	1,894	30.61	12.01	2.42	.81	1.13	.32	.04	47.34	1.48	45.86

shown in Table 33) is $38.49, ranging from $30.16 in Nebraska and $30.43 in South Dakota to $43.47 in Iowa (not considering two farms in Illinois and one in Indiana). In Minnesota the gross cost is $33.51.

The average feed cost is $9.93, varying from $7.59 in South Dakota to $12.18 in Iowa and $12.32 for one farm in Indiana. The labor charge averages $2.50, and the equipment charge, $1.16.

Deducting the average manure credit of $1.89, the net cost of producing a yearling in this group is $36.60. The average weight ranged from 350 to 400 pounds.

Cost of producing a yearling in the mixed group.—The average gross cost of producing a yearling in the mixed group (see Table 34), based on records from 96 farms, is $47.34, ranging from $37.18 in South Dakota to $50.76 in Nebraska and $68.19 for two farms in Missouri. The feed charge is $12.01, ranging from $7.58 on two farms in Missouri to $13.45 in Iowa. The feed charges in the remaining States show but little variation, averaging from $10.55 in Minnesota to $11.79 in Nebraska. The item of labor is $2.42, while the equipment and interest charges are 81 cents and $1.13, respectively. The average net cost of producing a yearling in the mixed group, after deducting a manure credit of $1.48, is $45.86. The average weight of the yearlings in this group which were with the cows was nearly the same as that of the yearlings in the beef group, while the yearlings which had been fed skim milk compared closely to the dual-purpose yearlings.

Cost of producing a yearling in the partially-milked group.—The average gross cost of producing a yearling in the partially-milked group (see Table 35) is $43.26, varying from $30.27 in Nebraska to $47.66 in Indiana. The average gross cost is $45.22 for 1914, as against $37.27 for 1915. The feed cost ranges from $9.63 for two farms in Nebraska to $14.39 in Iowa (omitting one farm in Illinois), averaging $12.21 per yearling. The labor cost is $2.58, while the charge for equipment is 72 cents. Interest amounts to $1.01. The average net cost, after deducting a manure credit of $1.54, is $41.72. These yearlings were intermediate in size between those in the beef and dual-purpose groups.

Cost of producing a yearling in the double-nursing group.—The average gross cost of producing a yearling in the double-nursing group (as shown by Table 36) is $31.92, the average for Iowa being $32.57. The feed cost averages $10.24, while that for labor averages $1.85. Deducting a manure credit of $1.67, the average net cost of these yearlings is $30.25. The yearlings in this group weighed nearly as much as those in the beef group.

TABLE 35.—*The cost of producing a yearling, based on the averages of 57 farms in the partially-milked group.*

State.	Number of farms.	Number of calves.	Average cost per yearling.									
			Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.	Manure credit.	Net cost.
Indiana:												
1914	14	117	$30.32	$12.08	$2.94	$0.86	$1.14	$0.32	$0.00	$47.66	$1.48	$46.18
Illinois:												
1914	1	10	13.05	18.30	2.48	1.25	.70	.32	.04	36.14	2.10	34.04
Iowa:												
1914	3	60	23.34	17.09	2.05	.76	.99	.32	.00	44.55	2.10	42.45
1915	4	54	25.17	12.36	2.09	.83	.97	.32	.01	41.75	2.10	39.65
Both years	7	114	24.38	14.39	2.07	.80	.98	.32	.01	42.95	2.10	40.85
Missouri:												
1914	18	193	29.44	13.36	2.55	.52	1.12	.32	.06	47.37	1.45	45.92
1915	8	129	23.45	8.79	2.78	.54	.88	.32	.02	36.78	1.45	35.33
Both years	26	322	27.60	11.95	2.62	.53	1.04	.32	.05	44.11	1.45	42.66
Nebraska:												
1914	1	22	32.41	13.65	.82	.71	1.19	.32	.04	49.14	1.76	47.38
1915	1	10	3.10	5.60	1.35	.67	.20	.32	.14	11.38	1.76	9.62
Both years	2	32	17.76	9.63	1.08	.69	.70	.32	.09	30.27	1.76	28.51
Kansas:												
1914	6	70	18.72	10.80	2.61	1.10	.76	.32	.00	34.31	1.22	33.09
1915	1	11	30.57	13.09	3.34	.61	1.15	.32	.11	49.19	1.22	47.97
Both years	7	81	20.41	11.13	2.71	1.03	.82	.32	.02	36.44	1.22	35.22
Grand total or general average:												
1914	43	472	27.49	12.87	2.71	.75	1.06	.32	.02	45.22	1.51	43.71
1915	14	204	23.00	9.88	2.52	.64	.87	.32	.04	37.27	1.64	35.63
Both years	57	676	26.39	12.21	2.58	.72	1.01	.32	.03	43.26	1.54	41.72

TABLE 36.—*The cost of producing a yearling, based on the averages of 22 farms in the double-nursing group.*

State.	Number of farms.	Number of calves.	Average cost per yearling.									
			Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.	Manure credit.	Net cost.
Indiana:												
1914	1	12	$32.35	$10.38	$2.25	$1.41	$1.16	$0.32	$0.00	$47.87	$1.29	$46.58
Illinois:												
1914	2	15	30.13	9.65	2.96	.96	1.09	.32	.00	45.11	1.92	43.19
Minnesota:												
1914	2	40	26.96	11.47	1.75	1.03	1.00	.32	.00	42.53	1.22	41.31
1915	1	20	21.67	9.22	1.58	.97	.81	.32	.08	34.65	1.22	33.43
Both years	3	60	25.20	10.72	1.69	1.01	.92	.32	.04	39.90	1.22	38.68
Iowa:												
1914	1	15	28.16	6.40	1.80	1.47	.97	.32	.00	39.12	1.92	37.20
1915	11	182	17.47	11.00	1.70	.79	.69	.32	.00	31.97	1.92	30.05
Both years	12	197	18.36	10.62	1.70	.85	.72	.32	.00	32.57	1.92	30.65
Nebraska:												
1915	1	7	16.65	9.63	3.26	1.97	.69	.32	.17	32.69	1.61	31.08
Kansas:												
1915	3	42	[1]—4.40	8.80	1.28	.88	.01	.32	.08	6.97	1.12	5.85
Grand total or general average:												
1914	6	82	29.11	9.84	2.25	1.14	1.05	.32	.00	43.71	1.58	42.13
1915	16	251	13.58	10.39	1.71	.89	.57	.32	.04	27.50	1.70	25.80
Both years	22	333	17.82	10.24	1.85	.96	.71	.32	.02	31.92	1.67	30.25

[1] Minus quantity indicates excess of credits above costs.

A COMPARISON OF THE VARIOUS ITEMS OF EXPENSE IN PRODUCING A YEARLING.

The various items of expense in producing a yearling are compared by groups in Table 37, while the relation that each of these items bears to the total cost of producing a yearling is shown in Table 38. The winter-feed costs do not differ greatly in the four groups, varying from $9.93 in the dual-purpose group to $12.32 for the beef group. This item makes from 22.3 to 32.1 per cent of the total expense.

The labor charges in the dual-purpose, mixed, and partially-milked groups are very even, averaging approximately $2.50 for the three groups. The labor charge in the beef group is $2.19, while in the double-nursing group this charge drops to $1.85. Labor constitutes from 4 to 6½ per cent of the total cost.

The equipment charge ranges from 68 cents per head for beef calves, where a minimum amount of shelter is used, to $1.16 for those of the dual-purpose group. Many of the beef calves were allowed to run in the open, while those in the dual-purpose group were usually kept in buildings. The equipment charge makes from 1¼ to 3 per cent of the total. The interest charge makes from 2¼ to 2½ per cent of the total amount. The risk was uniformly 32 cents in all groups and made from one-half to 1 per cent of the total cost. The charges of taxes, insurance, and veterinary expense, taken together, made an expense of approximately 1 per cent.

The net maintenance cost of these calves, including all items of expense except cost at weaning time, and allowing credit for the value of the manure, is as follows: Double nursing, $12.43; dual purpose, $12.96; mixed, $15.25; partially milked, $15.33; beef, $15.34; there being an average difference of about $3 between the double nursing and the beef groups.

Although the cost of maintenance is nearly the same in all groups, there is a variation of a little over $23 between the cost of producing calves in the double-nursing and the beef groups. Those in the former group cost at approximately 13 months of age $30.25, while the beef calves cost $53.54. The costs in the other groups were as follows: Dual purpose, $36.60; partially milked, $41.72; mixed, $45.86.

TABLE 37.—*The various items of expense in producing a yearling, compared by groups.*

Group.	Number of farms.	Average cost per yearling.									
		Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.	Manure credit.	Net cost.
Beef:											
1914	91	$39.41	$12.68	$2.21	$0.62	$1.40	$0.32	$0.03	$56.67	$1.59	$55.08
1915	99	37.09	11.98	2.18	.73	1.33	.32	.10	53.73	1.61	52.12
Both years	190	38.20	12.32	2.19	.68	1.36	.32	.07	55.14	1.60	53.54
Dual purpose:											
1914	47	29.41	9.85	2.55	1.21	1.07	.32	.02	44.43	2.03	42.40
1915	52	18.43	10.00	2.47	1.11	.75	.32	.05	33.13	1.77	31.36
Both years	99	23.64	9.93	2.50	1.16	.90	.32	.04	38.49	1.89	36.60
Mixed:											
1914	45	33.71	12.24	2.50	.83	1.23	.32	.00	50.83	1.45	49.38
1915	51	27.88	11.80	2.35	.81	1.03	.32	.07	44.26	1.51	42.75
Both years	96	30.61	12.01	2.42	.81	1.13	.32	.04	47.34	1.48	45.86
Partially milked:											
1914	43	27.49	12.87	2.71	.75	1.06	.32	.02	45.22	1.51	43.71
1915	14	23.00	9.88	2.52	.64	.87	.32	.04	37.27	1.64	35.63
Both years	57	26.39	12.21	2.58	.72	1.01	.32	.03	43.26	1.54	41.72
Double nursing:											
1914	6	29.11	9.84	2.25	1.14	1.05	.32	.00	43.71	1.58	42.13
1915	16	13.58	10.39	1.71	.89	.57	.32	.04	27.50	1.70	25.80
Both years	22	17.82	10.24	1.85	.96	.71	.32	.02	31.92	1.67	30.25

TABLE 38.—*The relation that each item of expense bears to the total cost of producing a yearling in the five groups.*

Group.	Number of farms.	Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Total cost.
Beef:		*Per cent.*	*Per cent.*	*Per cent.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per cent.*	*Per ct.*
1914	91	69.54	22.38	3.90	1.09	2.47	0.57	0.05	100
1915	99	69.03	22.30	4.06	1.36	2.47	.59	.19	100
Both years	190	69.28	22.34	3.97	1.23	2.47	.58	.13	100
Dual purpose:									
1914	47	66.19	22.17	5.74	2.72	2.41	.72	.05	100
1915	52	55.63	30.18	7.46	3.35	2.26	.97	.15	100
Both years	99	61.42	25.80	6.50	3.01	2.34	.83	.10	100
Mixed:									
1914	45	66.32	24.08	4.92	1.63	2.42	.63	.00	100
1915	51	62.99	26.66	5.31	1.83	2.33	.72	.16	100
Both years	96	64.66	25.37	5.11	1.71	2.39	.68	.08	100
Partially milked:									
1914	43	60.79	28.46	5.99	1.66	2.35	.71	.04	100
1915	14	61.71	26.51	6.76	1.72	2.33	.86	.11	100
Both years	57	61.00	28.22	5.97	1.67	2.33	.74	.07	100
Double nursing:									
1914	6	66.60	22.51	5.15	2.61	2.40	.73	.00	100
1915	16	49.38	37.78	6.22	3.24	2.07	1.16	.15	100
Both years	22	55.83	32.08	5.80	3.01	2.22	1.00	.06	100

TABLE 39.—*The difference between cost of production and inventory or sale value of calves and yearlings, by groups.*

Group.	Sold or inventoried at weaning time.					Sold Jan. 1 to July 1.						Inventoried May 1.				
	Number.	Average value.	Average cost.	Loss.	Gain.	Number.	Average date.	Average value.	Average cost.	Loss.	Gain.	Number.	Average value.	Average cost.	Loss.	Gain.
Beef:																
1914	996	$31.93	$35.69	$3.76	.....	206	Apr. 6	$44.35	$56.09	$11.74	.....	1,692	$38.17	$54.69	$16.52	.....
1915	555	36.11	33.56	.....	$2.55	26	Mar. 23	49.75	46.25	.....	$3.50	2,725	37.30	51.87	14.57	.....
Both years	1,551	33.45	34.92	1.47	.....	232	Apr. 3	45.16	53.77	8.61	.....	4,417	37.70	53.16	15.46	.....
Dual purpose:																
1914	64	20.57	44.50	23.93	.....	33	Mar. 7	33.90	32.03	.....	1.87	440	33.00	42.35	9.35	.....
1915	84	25.31	1.85	.....	23.46	108	Mar. 15	33.18	34.54	1.36	.....	465	29.33	31.37	2.04	.....
Both years	148	22.94	23.17	.23	.....	141	Mar. 12	33.41	33.75	.34	.....	905	31.17	36.80	5.63	.....
Mixed:																
1914	199	27.61	34.16	6.35	.....	30	Mar. 20	37.00	58.94	21.94	.....	903	35.93	48.95	13.02	.....
1915	59	27.62	28.11	.49	.....	77	Mar. 17	41.48	49.52	8.04	.....	872	31.95	43.24	11.29	.....
Both years	258	27.62	32.35	4.73	.....	107	Mar. 18	40.25	52.08	11.83	.....	1,775	33.85	45.97	12.12	.....
Partially milked:																
1914	104	26.68	32.44	5.76	.....	76	Apr. 13	40.29	43.64	3.35	.....	453	34.80	43.11	8.31	.....
1915	92	32.76	30.61	.....	2.15	22	May 1	42.00	29.06	.....	12.94	182	37.39	35.63	.....	$1.76
Both years	196	29.06	31.71	2.65	.....	98	Apr. 16	40.63	40.88	.25	.....	635	35.51	41.06	5.65	.....
Double nursing:																
1914	5	30.00	41.00	11.00	.....	.....	.....	.....	.....	.....	.....	82	32.50	42.13	9.63	.....
1915	3	30.00	21.26	.....	8.44	6	Mar. 1	51.00	31.08	.....	19.92	284	34.19	25.80	.....	8.39
Both years	8	30.00	31.13	1.13	.....	6	Mar. 1	51.00	31.08	.....	19.92	366	33.73	30.25	.....	3.48

A COMPARISON OF THE COST OF PRODUCTION AND THE VALUE OF CALVES AND YEARLINGS.

In Table 39 the cost of production of calves in the five groups other than baby beef is compared with their sale or inventory value.

Approximately one-fifth of the calves produced were sold or inventoried at weaning time. The first part of the table shows the value of the calves that were sold at weaning time, together with a statement of gain or loss. Taking the two years' records as a whole, the calves bring an average of a little less than the cost of production, showing a loss of from 23 cents per calf in the dual-purpose group to $4.73 per calf in the mixed group. The loss shown in the 1914 records is much greater, as the calves in the area affected by drought not only cost more to produce, but were of a poorer quality than usual. In Kansas, where it is customary to keep the calves until they are two or three years old and then fatten them for market, many were sold for lack of feed. In the 1915 records the calves show a profit in all but the mixed group, where there was a loss of 49 cents per head.

The calves that were carried through the winter and inventoried when put on pasture the following spring generally show a loss which, in some instances, is greater than the cost of wintering. All the animals inventoried in 1914 show a loss ranging from $8.31 for those in the partially-milked group to $16.52 in the beef group. Of the calves inventoried in 1915, those in the partially-milked and double-nursing groups show a profit, while in the remaining groups the inventory value is less than the cost of production. The average for the two years shows a loss in all except the double-nursing group, where the average profit is $3.48. The beef calves average in cost $15.46 more than their inventory value as yearlings.

About 6.7 per cent of the calves carried through the winter were sold during the spring months. The average loss on these was less than that on the animals inventoried, it being evident that the farmers sold those calves which would bring the most money. With the exception of the dual-purpose group, where only 33 calves were sold, the calves sold in 1915 lost less than those sold in 1914.

The fact that so few calves were sold in the spring, and that these brought more than the average price, would indicate that the farmers realized that it is not usually profitable to carry stocker calves through the winter months unless the animals are held over and run on pasture until the following fall. This is true because a calf held over until the spring when he is a yearling has reached the period of greatest expense as compared with selling value. Had it been possible to continue the records on these animals until November or December, they would have shown a much smaller loss. The average charges for the summer season, including pasturage, interest,

and other items of expense, would not have exceeded $8 to $10 per head, while the yearlings would have made sufficient gains in weight to have increased in value at least $15 to $20.

The figures in the table indicate that the calves in the double-nursing group were more profitable than those in any of the other four groups. Although this practice is the least common among farmers and only 22 records were procured, the figures obtained are very significant. The inventory value of the calves in this group is $4 less than that of the beef calves, and the cost of production is approximately $23 less. While the inventory value of the double-nursing calves is nearly the same as for the calves in the remaining groups, their cost of production was so much less that they showed a profit of from $10 to $15 over the others. These advantages are due to the milk credits (which were obtained without extra labor other than milking), to a larger percentage of calves produced by the cows, and to a larger proportion of the records being taken in the more favorable year of 1915. This indicates that the milking of the best cows and putting their calves on other cows is an economic practice. The figures also indicate that this method of handling the herd is one which deserves more careful attention on the part of the farmers, as it may prove to be the most profitable way of handling the breeding herd.

The calves in the dual-purpose group were evidently the poorest in quality, as shown by their inventory and sale values. However, the cost of production of the calves in this group is so low that they generally rank next to the double-nursing calves in profit.

The calves in the partially-milked group cost somewhat more to produce than did those in the dual-purpose group, but as this increased cost is reflected in the value of the calves, the profit or loss for the two groups is very nearly the same.

The calves in the beef group were of the best quality, but their cost of production was so much greater than the cost of those in the other groups that they seem to be the least profitable. In this connection it should be stated that on a number of farms one or more of the best bull calves were sold for breeding purposes at a much higher price than any of the figures given, these exceptional returns not having been included in the tables.

In the mixed group the practice is a combination of that followed in the dual-purpose and the beef group, and both the cost and the value of the calves raised are intermediate between those of these two groups. As but 37 per cent of the cows in this group are milked, the figures more nearly approximate those for the beef than for the dual-purpose group.

FIG. 1.—A BUNCH OF CALVES THAT WILL MAKE EXCELLENT BABY BEEF.

FIG. 2.—TWENTY-ONE BABY BEEVES FROM SOUTHWESTERN IOWA THAT AVERAGED 924 POUNDS WHEN 16 MONTHS OLD. THESE ARE ABOVE THE AVERAGE OF THE BABY BEEVES ON WHICH RECORDS WERE TAKEN.

BABY-BEEF CALVES.

COST OF PRODUCING BABY BEEF.

Records were obtained from 60 farms producing baby beef (see Table 40). Of these, 7 were visited two years in succession. In the case of one of the Missouri farms, the record is only for the finishing of the calves, which were purchased at weaning time at a price approximately the same as the average cost of production of the other calves of that State. While 2,072 calves were raised on these farms, only 1,642, or an average of 24½ calves to the farm, were selected to be fattened as baby beef. There were 381 calves purchased at weaning time, making the total number on feed 2,023, which was an average of 30.2 calves to the farm. This number varied from 27.4 in Missouri to 44 for two farms in Illinois.

TABLE 40.—*The number of calves raised and purchased which were fattened for baby beef.*

State.	Number of farms.	Number of calves.			Average per farm.		
		Raised.	Purchased.	Total.	Raised.	Purchased.	Total.
Illinois:							
1914	2	73	15	88	36.5	7.5	44.0
Iowa:							
1914	15	345	113	458	23.0	7.5	30.5
1915	30	688	169	857	22.9	5.6	28.5
Both years	45	1,033	282	1,315	22.9	6.3	29.2
Missouri:							
1914	3	35	20	55	11.7	6.6	18.3
1915	2	42	40	82	21.0	20.0	41.0
Both years	5	77	60	137	15.4	12.0	27.4
Nebraska:							
1914	6	165	14	179	27.5	2.3	29.8
1915	3	91	10	101	30.3	3.3	33.6
Both years	9	256	24	280	28.4	2.7	31.1
Kansas:							
1915	6	203	0	203	33.8	.0	33.8
Grand total, or general average:							
1914	26	618	162	780	23.8	6.2	30.0
1915	41	1,024	219	1,243	25.0	5.3	30.3
Both years	67	1,642	381	2,023	24.5	5.7	30.2

In general, those animals of suitable quality that were not desired for breeding purposes were selected for feeding, and a sufficient number of similar calves were purchased to make possible finishing in even carload lots. As the purchased calves were usually from near-by farms, and as their purchase price was approximately the same as the cost of the home-grown animals at weaning time, they have been included with the others as costing the same at weaning time. Plate V, figure 1, shows a bunch of calves on a farm in Kansas, a part of which are retained for breeding purposes, the remainder being finished as baby beef. Some of the calves were started on full feed at weaning time and were sold in the early summer. The rest were allowed to make a good growth during the winter months and fattened in the summer, either in dry lots or on pasture, the latter being sold in the late fall or early winter. The calves were carried for an average period of six to seven months from the time they were weaned. The average feeding period in Iowa was eight months.

TABLE 41.—*The gross cost of producing a baby-beef animal, based on the average of 67 farms.*

State.	Number of farms.	Cost at weaning time.	Feed.	Labor.	Equipment.	Interest.	Risk.	Other charges.	Gross cost.
Illinois:									
1914	2	$37.07	$27.97	$1.86	$1.24	$2.62	$0.32	$0.12	$71.20
Iowa:									
1914	15	37.53	34.85	3.02	1.15	2.03	.32	.03	78.93
1915	30	36.41	37.96	2.45	.80	2.38	.32	.06	80.38
Both years	45	36.78	36.92	2.64	.92	2.27	.32	.05	79.90
Missouri:									
1914	3	37.16	24.27	2.08	1.00	1.89	.32	.02	66.74
1915	2	34.41	27.80	2.83	.27	2.00	.32	.11	67.74
Both years	5	36.06	25.68	2.37	.71	1.93	.32	.06	67.13
Nebraska:									
1914	6	41.09	43.54	2.33	1.01	2.07	.32	.05	90.41
1915	3	27.08	27.90	3.63	.52	1.33	.32	.22	61.00
Both years	9	36.42	38.32	2.76	.85	1.82	.32	.11	80.60
Kansas:									
1915	6	40.36	25.96	2.00	1.11	1.71	.32	.22	71.68
Grand total or general average:									
1914	26	38.27	35.11	2.66	1.11	2.07	.32	.04	79.58
1915	41	36.21	34.97	2.49	.80	2.19	.32	.10	77.08
Both years	67	37.01	35.02	2.56	.92	2.14	.32	.08	78.05

TABLE 42.—*The net cost of producing a baby-beef animal, based on the average of 67 farms.*

State.	Number of farms.	Gross cost.	Credits.			Net cost.
			Manure.	Pork.	Total.	
Illinois:						
1914	2	$71.20	$5.90	$1.34	$7.24	$63.96
Iowa:						
1914	15	78.93	5.81	2.40	8.21	70.72
1915	30	80.38	5.86	2.11	7.97	72.41
Both years	45	79.90	5.84	2.21	8.05	71.85
Missouri:						
1914	3	66.74	4.41	.97	5.38	61.36
1915	2	67.74	4.22	2.17	6.39	61.35
Both years	5	67.13	4.33	1.45	5.78	61.35
Nebraska:						
1914	6	90.41	4.94	3.95	8.89	81.52
1915	3	61.00	4.94	1.05	5.99	55.01
Both years	9	80.60	4.94	2.98	7.92	72.68
Kansas:						
1915	6	71.68	3.36	1.24	4.60	67.08
Grand total or general average:						
1914	26	79.58	5.45	2.52	7.97	71.61
1915	41	77.08	5.35	1.91	7.26	69.82
Both years	67	78.05	5.39	2.14	7.53	70.52

The various items of expense in fattening these animals are shown in Table 41. The average gross cost is $78.05, while that for Iowa, where the greater part of the records were obtained, is $79.90. The initial cost of these animals averages $37.01, while the feed cost is $35.02. These two items make a little over 92 per cent of the total cost. Seventy-three per cent of the total feed cost is for concentrates, the remainder being for roughage and pasture. Corn was the principal grain used, forming 59.2 per cent of the feed cost. This was fed in the form of shelled corn or ear corn on all but eight farms,

where corn-and-cob meal or ground corn was used. Oats, constituting 6.7 per cent of the feed cost, were used principally at weaning time, before the calves were started on corn. Oil meal and cottonseed meal, which were used in finishing, constitute less than 2 per cent of the total feed bill.

Hay was the most common roughage used in finishing the baby-beef calves, there being only two farms where it was not a part of the ration. It constitutes almost one-fifth of the total feed cost and amounts to $6.55 per calf. Silage was used on 17 farms, where it formed practically 19 per cent of the total feed cost. On 23 farms where the calves were fed on pasture, the pasture charge constitutes about 12 per cent of the total feed costs. The labor in caring for the calves amounts to $2.56, or 3.3 per cent of the total cost. The item of interest amounts to $2.14 per calf. Interest was charged on the average inventory value, which was determined in the same manner as for the yearlings, at the rate of 6 per cent per annum for the length of time that the calves were on feed. The risk charge was determined in the same manner as for the yearlings.

In obtaining the net cost of producing baby beef, it is necessary that the credits for manure and pork products be deducted. The value of these credits is shown in Table 42. The manure credit is assumed to be the same as for the breeding animals, and averages $5.39 per animal, varying from $3.36 in Kansas to $5.90 in Illinois.

Very few farmers can give any estimate as to the amount of pork that should be credited to the baby-beef animals. Nearly all of the calves were followed by hogs, but some of the pigs had the run of all the yards, while those confined with the calves were frequently shifted to other yards, and as sows that were being kept on maintenance rations frequently were included it was, in most instances, impossible to form even an approximate idea of the number of pounds of pork produced. It was therefore decided to credit 1 pound of pork to each bushel of shelled corn and one-half pound of pork to each bushel of corn-and-cob meal that was fed, basing the credit on the results of feeding experiments of three years' duration conducted in Indiana.[1] The price used for pork credits for the year 1914 was $7.85 per 100 pounds, and that for 1915 $6.60 per 100 pounds. These figures were determined by subtracting 50 cents per hundredweight from the average Chicago price of hogs for the calendar year, exclusive of light pigs. The 50 cents deduction is on the average very close to the cost of shipping hogs from the region where the majority of these calves were produced to the Chicago market.

The average net cost for baby beef, after deducting these two credits, is $70.52, which varies from $63.96 for two farms in Illinois in 1914 to $71.85 in Iowa, where most of the records were procured.

[1] Bulletin No. 146, Purdue University (Ind.) Agricultural Experiment Station, p. 605.

These calves, when finished, averaged (market weights, see Table 43) 834 pounds. The lightest animals were from Kansas (747 pounds), having been fed for only 6.2 months, while the Illinois calves, which were fed 10.2 months, weighed 888 pounds. Plate V, figure 2, shows a carload of baby-beef animals that sold on the Chicago market in August, 1914, when 16 months old, for $87.60, weighing 924 pounds per head.

The baby-beef animals sold for an average of $73.45 a head (see Table 43), or $8.81 per hundredweight. The average price for 1914 was $72.11 per head, or $2.20 less than in 1915, the average difference per hundredweight being 17 cents. The selling price varied from $62.26 per head, or $8.24 per hundredweight, in Missouri to $80.28 per head, or $9.04 per hundredweight, in Illinois. The average cost of marketing was $2.15, making the farm value $71.30. The average farm profit for the two years was 78 cents per head, or 9 cents per hundredweight. In 1914 there was a loss of $1.42 on each baby-beef animal. The baby beeves sold in 1915 made a profit of $2.18 a head, or 26 cents per hundredweight. These animals generally weighed a little more than did those in 1914, and also brought a little better price.

TABLE 43.—*The weight, selling price, cost of marketing, farm value, and gain or loss for baby-beef animals, based on the average of 67 farms.*

State.	Number of farms.	Months on feed.	Average weight.	Per head.						Per hundredweight.					
				Net cost.	Selling price.	Cost of marketing.	Farm value.	Gain.	Loss.	Cost.	Selling price.	Cost of marketing.	Farm value.	Gain.	Loss.
Illinois:															
1914	2	10.2	888	$63.96	$80.28	$2.68	$77.60	$13.64	.....	$7.22	$9.04	$0.30	$8.74	$1.54	.....
Iowa:															
1914	15	7.1	803	70.72	70.45	2.01	68.44	.....	$2.28	8.81	8.84	.25	8.58	.....	$0.29
1915	30	8.3	867	72.41	78.21	2.57	75.64	3.23	.....	8.35	9.02	.30	8.72	.37	.....
Both years	45	7.9	846	71.85	75.62	2.38	73.24	1.39	.....	8.50	8.94	.28	8.66	.16	.....
Missouri:															
1914	3	6.8	776	61.36	64.37	.74	63.63	2.27	.....	7.88	8.30	.10	8.20	.29	.....
1915	2	7.1	720	61.35	59.08	1.57	57.51	.....	3.84	8.46	8.20	.22	7.98	.....	.53
Both years	5	6.9	754	61.35	62.26	1.08	61.18	.....	.17	8.11	8.24	.14	8.10	.....	.02
Nebraska:															
1914	6	6.8	896	81.52	77.40	2.04	75.36	.....	6.16	9.18	8.64	.23	8.41	.....	.69
1915	3	5.9	789	55.01	67.54	1.62	65.92	10.91	.....	6.96	8.56	.21	8.35	1.38	.....
Both years	9	6.5	860	72.68	74.11	1.90	72.21	.....	.47	8.45	8.62	.22	8.40	.....	.05
Kansas:															
1915	6	6.2	747	67.08	63.27	1.65	61.62	.....	5.46	9.02	8.47	.22	8.25	.....	.73
Grand total or general average:															
1914	26	7.2	828	71.61	72.11	1.92	70.19	.....	1.42	8.66	8.71	.23	8.48	.....	.17
1915	41	7.8	837	69.82	74.31	2.31	72.00	2.18	.....	8.35	8.88	.28	8.60	.26	.....
Both years	67	7.6	834	70.52	73.45	2.15	71.30	.78	.....	8.47	8.81	.26	8.55	.09	.....